THE ECHINODERM NEWSLETTER

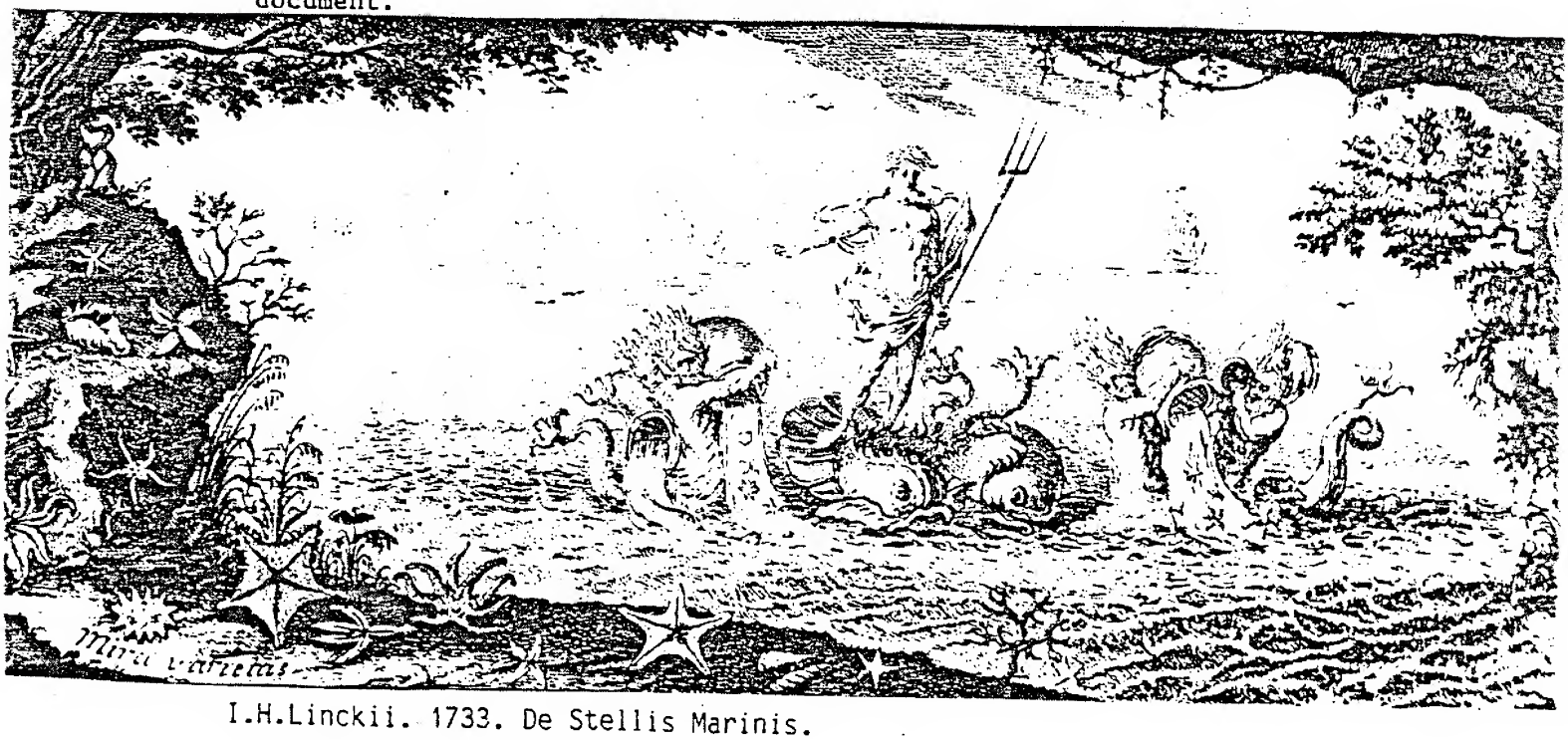
Number 14. June 1985

Editor: John Lawrence
Department of Biology
University of South Florida
Tampa, FL 33620 U.S.A.

Distributed by the Department of Invertebrate Zoology
National Museum of Natural History
Smithsonian Institution
Washington, D.C. 20560 U.S.A.
(David Pawson, Maureen E. Downey)

The newsletter generally contains information concerning meetings and conferences and publications of interest to echinoderm biologists, titles of theses on echinoderms, and research interests and addresses of echinoderm biologists. The last page of this newsletter is a form which can be sent to the editor by individuals who desire to be added to the list of echinoderm specialists published in this newsletter.

The newsletter is not intended to be a part of the scientific literature and should not be cited, abstracted, or reprinted as a published document.



I.H.Linckii. 1733. De Stellis Marinis.

ECHINODERM CONFERENCE 1987

Site: University of Victoria
Date: Sunday, 23 August to Friday, 28 August 1987
Organizer: Robert D. Burke
Department of Biology
University of Victoria
PO Box 1700
Victoria, British Columbia
Canada V8W 2Y2

telephone (604) 721-7094, TELEX 049-7222

Previous conferences:
1972 Washington, D.C., U.S.A.
1975 Rovinj, Yugoslavia
1978 Sydney, Australia
1981 Tampa Bay, U.S.A.
1984 Galway, Ireland

SECOND INTERNATIONAL SYMPOSIUM ON INDO-PACIFIC MARINE BIOLOGY

Site: Guam
Date: 22 June to 9 July 1986
Information: David Montgomery
Biological Sciences Department
California Polytechnic State University
San Luis Obispo, Calfornia 93407 U.S.A.

Symposium: Recent findings in Acanthaster biology and implications for reef management

---

ECHINODERM PHYLOGENY AND EVOLUTIONARY BIOLOGY

Site: British Museum (Natural History), London
Date: 15 and 16 December 1986
Organizer: A.B. Smith *
Department of Palaeontology
British Museum (Natural History)
Cromwell Road
London SW7 5BD
United Kingdom

C.R.C. Paul
Department of Geology
University of Liverpool
PO Box 147
Liverpool, Merseyside
United Kingdom

*Local secretary, for details

New Journal

Diseases of aquatic organisms. Editor-in-chief: O. Kinne.
Contents:
- critical intensities of environmental factors, including pollutants co-existing organisms (microorganisms, unicellular and multicellular parasites)
- nutritional disorders
- innate, idiopathic or genetic diseases
- proliferative disorders (tumors)
- stress and physical injuries

Editor for echinoderm diseases:
Michel Jangoux
Laboratoire Biologie marine (160)
Universite Libre de Bruxelles
B-1050, Belgium

FELLOWSHIPS AT THE AUSTRALIAN MUSEUM

Australian Museum Visiting Fellowships

Two or more fellowships are available each year (1 July to 30 June) from the Australian Museum Trust. They are designed to promote research in the Museum's area of interest, particularly but not exclusively relating to significant collections held by the Museum for which there is not resident staff specialist. The primary aim is to promote collection-based research, but ecologically-oriented projects are encouraged, especially where these supplement or complement on-going research by the resident ecologists. Application deadline: 31 January, each year.

Interested individuals should contact Dr. F.W.E. Rowe, The Australian Museum, P.O. Box A285, Sydney South NSW 2000, Australia.

CURATORIAL ASSISTANT (INVERTEBRATES) - LOS ANGELES COUNTY MUSEUM

Gordon Hendler is seeking an assistant, preferably with a BS or MS level degree, and as much relevant systematics and curatorial experience as possible, to work with a growing collection of ECHINODERMS (including the Allan Hancock Foundation collection) at the Los Angeles County Museum. Starting salary is $1,540 per month plus benefits. If interested, please send your resume to Dr. Gordon Hendler, Department of Invertebrates (Life Sciences), Natural History Museum, 900 Exposition Boulevard, Los Angeles, CA 90007.

RECENT SUBMISSIONS TO AND OPINIONS OF THE INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

1981. Opinion 1187. Ophiolepis Müller & Troschel, 1840 (Ophiuroidea) designation of types species. Bull. zool. Nom. 38(4):191-193.

This ruled that Ophiolepis superba H. L. Clark, 1915 be designated as type species and previous designations set aside. Both Ophiolepis and O. superba were added to the appropriate Official Lists.

1982. Clark, A. M. & Rowe, F. W. E. Revised proposals for stabilization of the names of certain genera and species of Holothurioidea. Bull. zool. Nom. 39(1):29-35.

Since the earlier submission (1967) did achieve stability of some generic names by designation of type species and the likelihood of some others giving trouble is remote, this note was limited to asking for suppression of Trepang Jaeger, 1833 as a generic name so as to remove a threat to the well-used Halodeima Pearson, 1914; also for rejection of two obscure subgeneric names of Brandt and for specific names of various nineteenth century authors. Unfortunately, the more significant problem of Thyonidium and Duasmodactyla proved to have further complications and was shelved for lack of time.

1982. Williams, R. B., Cornelius, P. F. S. & Clark, A. M. Proposed conservation of Actinia Linnaeus, 1767 and Actiniidae Goldfuss, 1820 (Coelenterata, Actiniaria) and Pentacta Goldfuss, 1820 (Echinodermata, Holothurioidea). Bull. zool. Nom. 39(4):288-292.

Since Actinia Pallas, 1766 was based only on A. doliolum, currently recognised as a holothurian, not an anemone, under the rules it invalidates both Pentacta Goldfuss as a senior synonym and Actinia Linnaeus, 1767 as a senior homonym. This proposal was intended to try and stabilise both the last names in their current wide usage by suppressing Actinia Pallas. Pentacta and its type species Actinia doliolum Pallas are proposed for inclusion on the appropriate Lists.

Feb., 1985. Ride, W. D. L. et al. International Code of Zoological Nomenclature: adopted by the XX general assembly of the International Union of Biological Sciences.

This third edition of the 'Code' is considerably expanded from previous ones.

Opinion 1295. Actinia Linnaeus, 1767 and Actiniidae Rafinesque, 1815 (Coelenterata, Actiniaria) and Pentacta Goldfuss, 1820 (Echinodermata, Holothurioidea): conserved. Bull. zool. Nom. 42(1): 34-36, 1985. (As a result of this, Pentacta Goldfuss, 1820 and doliolum Pallas, 1766, were placed on the Official Lists of Generic and Specific Names in Zoology respectively.)

Contributed by Ailsa M. Clark

RESEARCH: SOLITARY OR JOINT EFFORT?

The last two decades have shown an explosive increase of the number of papers on echinoderms. Moreover, also the number of investigators working on echinoderms and that of topics studied have increased. This expansion of echinoderm research, resulting in a great increase of data, has caused loss of overview for most investigators. However, a number of them, particularly those studying typically molecular aspects do not need or want this overview. This is true also for a second category of investigators, who are primarily process-interested: they study basic processes (such as oocyte maturation or spermatogenesis) and use echinoderms only as well-suited test objects. These cell biologists fit their results into the data known from other species and can arrive at a good integration of knowledge. There is a third category of scientists who are interested in echinoderms per se. They, for example, do not study the process of reproduction as such, but reproduction of echinoderms; more generally processes in which the whole individual is involved. This organismal physiology requires an integration of knowledge on several levels as morphology, metabolism, interorgan transport, and regulation by external or internal factors.

However, this integration gradually has become nearly impossible, which is clearly illustrated by the fact that twenty years ago the larger part of our knowledge on echinoderm physiology could be collected in one book ("The Physiology of Echinodermata", Boolootian, R.A., ed.). An update of this book would yield now a multivolume work, each volume dealing with one topic as has been done for nutrition in "Echinoderm Nutrition", edited by M. Jangoux and J.M. Lawrence.

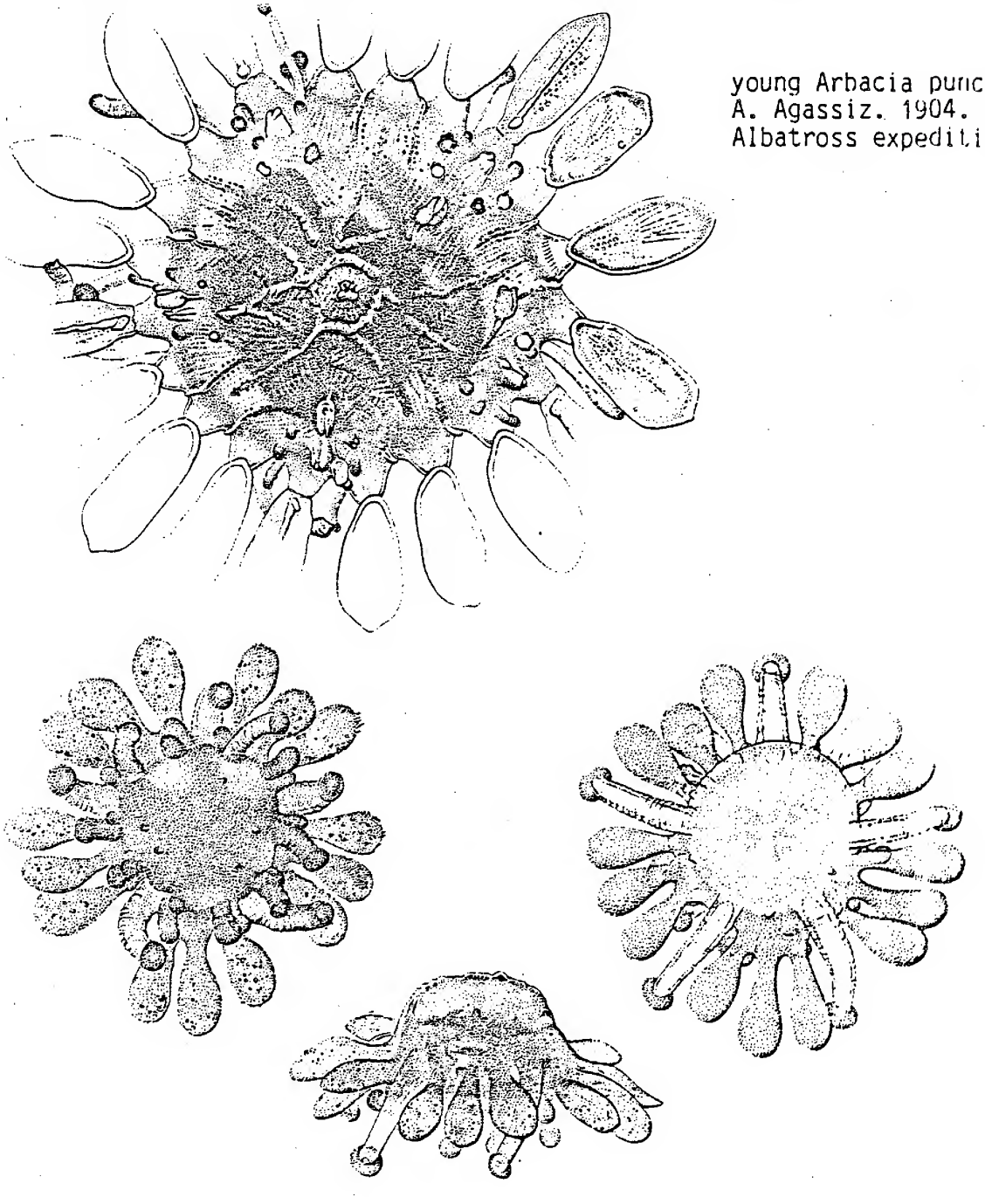
This development has made scientists increasingly dependent on reviews and summarizing lectures during conferences. In this respect the International Echinoderm Conferences have provided for clearly existing needs.

Further, scientists are more and more conscious of the "tight junction" between morphology and physiology. Morphology should extrapolate towards function, and explanations of observed phenomena in physiology should be based also on morphological features. However, most scientists are trained in only one of the two approaches. Therefore they prefer to present their work to a forum of colleagues with expertise in the same, adjacent, or complementary fields of research. The International Echinoderm Conferences have fulfilled this informing and also accounting function. The increasing number of attendants clearly shows the need for information and consultation, but unfortunately makes parallel sessions necessary. Yet it remains a pity that only work that already has been done is presented, so that criticism of the work or valuable advice are too late.

Only by forming bipartite or tripartite collaboration groups can such a hypothesis be tested. Of course this is only one example, but it clearly illustrates the present state of research.

Perhaps a coordinating function on behalf of the "International Echinoderms Conferences" (which is not a society) will be very helpful to reach to what is my conclusion: Research today will be effective only by a joint effort!

Dr. Peter A. Voogt
Utrecht
The Netherlands



young Arbacia punctulata
A. Agassiz. 1904.
Albatross expedition.

Echinoderm books in print

Broadhead, T. W. & J. A. Waters (eds.). Echinoderms: notes for a short course (Univ. of Tennessee Studies in Geology) 235 pp. 1980. Univ. of Tennessee, Geology, Knoxville.

Clark, A. M., & J. Courtman-Stock. The Echinoderms of Southern Africa. 1976. Pub. by Brit. Mus. (Nat. Hist.). Sabbot-Natural History Bks.

Clark, Ailsa M. & Fracis W. Rowe. Monograph of the Shallow-Water Indo-West Pacific Echinoderms. 238 p. 1971. Pub. by British Mus. (Nat. Hist.). Sabbot-Natural History Bks.

* Jangoux, Michel, & John M. Lawrence (eds.). Echinoderm Studies I. 1982. Balkema.

Jangoux, Michel. Echinoderms: Past and Present. 1980, Balkema.

Lawrence, J. M. Echinoderms: Proceedings of the International Conference, Tampa Bay. 1982. Balkema.

Moore, Raymond C. (ed). Treatise on Invertebrate Paleontology. Pt. U. Echinodermata 3. 2 vols. 1966. Geol. Soc.

Moore, Raymond C. (ed.). Treatise on Invertebrate Paleontology. Pt. S. Echinodermata 1. 2 vols. 1968. Geol. Soc.

Millott, N. (ed). Echinoderm Biology. 1968. Academic Pr.

Chamberlain, John B. et al. The Sea Urchin: Molecular Biology. Vol. 2. 1973. Irvington.

Czihak, G. & R. Peter (eds.). The Sea Urchin Embryo: Biochemistry & Morphogenesis. 1975. Springer-Verlag.

Giudice, Giovanni, Developmental Biology of the Sea Urchin Embryo. 1975. Academic Pr.

Stearns, Louis W. Sea Urchin Development, Cellular and Molecular Aspects. 1974. Van Nos Reinhold.

Terman, S.A. et al. Sea Urchin: Molecular Biology. Vol. 3. 1973. Irvington.

Clark, Ailsa M. Starfishes (new ed., original title: The Starfish and their Relations). 1977. TFH Pubs.

Smith, A.B. Echinoid palaeobiology. 1984. George Allen & Unwin, London.

Keegan, B. (Proceedings of the International Conference on Echinoderms, Galway). In press. Balkema.

---

* ESI: Sprinkle: Echinoderm evolution, Marcus: Phenotypic variability, Craig: Genomic variability, Shick: Respiratory gas exchange, Valentincic: Innate and learned responses, Campbell: Pedicellariae, Ebert: Recruitment.

ESII: Stickle & Diehl: Effect of salinity, Harrold & Pearse: Kelp-forest echinoderms, Emlet, McEdward & Strathmann: Reproductive strategies, Roux: Stalked crinoids.

* Subscription to Echinoderm Studies. Each volume will contain review articles on all aspects of echinoderm biology. Volume I appeared in 1983. Volume II is currently in production and anticipated to appear in late 1985 or early 1986. Volume III has been planned and is scheduled to appear in 1987.

Balkema Publishers (Lisplein 11, PO Box 1675, NL-3000 BR Rotterdam, The Netherlands) offers a 20% discount to individuals who subscribe to the series. This reduces the price from US$25.00 to US$20.00. The reduction also applies to volume one if the subscription is placed from volume one onwards.

REQUESTS (addresses in list of echinoderm specialists)

SERAFY: Duplicate echinoderm papers (mostly systematics and ecology of echinoids, asteroids, and ophiuroids) to sell or trade.

HOTCHKISS: Desires to purchase a copy of Mortensen's Monograph on the Echinoidea.

BOOTHE: Would like to receive any new range extension records or new species descriptions (especially any new or future publicatyions) of any echinoderm group from the Gulf of Mexico, Caribbean, or Northwest Atlantic) for use in a data base.

BERGER: Would like to learn of the presence of ciliates in the guts of regular echinoids (especially from Australia, New Zealand, Argentina, Chile, deep-water).

MLADENOV: Desires specimens of fissiparous brittle stars from the Indo-Pacific (e.g. Ophiactis savignyi, Ophiocomella spp.). Dried or alcohol preserved.

WEBSTER: Would appreciate receiving reprints of articles illustrating or systematically discussing Paleozoic crinoids for a bibliography and index.

CAMPBELL: Current research projects include aggregation behaviour in Asterias rubens; and ultrastructure, physiology, and evolution of echinoid pedicellariae.

MALUF: Requests unpublished distribution records for living echinoderms between Pt. Conception, California and central Peru. Especially interested in records from Central America north of Costa Rica and any records from Colombia.

DERSTLER: Is interested in learning of any fossil psolid holothuroids, either in the literature or unpublished records.

YANAGISAWA: Requests data on the breeding season and the size of mature gametes of echinoids.

YAMAGUCHI; Requests information about low-temperature tolerance of tropical echinoderms.

NOJIMA: Desires color slides of Astropecten spp. Is willing to provide specimens of Japanese asteroids if possible.

MAHFOUZ: Is interested in information on population and reproductive ecology of asteroids.

IMAOKA: Requests reprints of papers concerning systematics of holothuroids.

VOSS; Requests reprints of papers on antarctic asteroids.

VALENTINE: Would like information on Ophiactis quinquieradiata. Desires specimens of Ophiactis muelleri.

PARSLEY: Is interested in collections of echinoderms from Ordovician of Burma, China, and North Africa.

FISCHELSON: Desires information on the genus Choriaster.

KRISHNAN: Requests reprints of articles on echinoderm respiration.

MUNAR: Requests reprints of articles on fossil echinoids; on palaeoecology; on Echinocardium cordatum and E. fenauxi.

ALVAREZ, L R: is studying the effects of petrogenic hydrocarbons on coral-reef holothuroids and echinoids.

ALVAREZ, M de S: is studying Diadema and would like to receive reprints of papers on the ecology, sexuality, and larvae of tropical echinoids.

BIRTLES: desires information on reproduction and population dynamics of epizoic ophiuroids, particularly those on other echinoderms and especially if dwarf males are involved.

ALBUQUERQUE: is working on ophiuroids of the north and northeast continental shelf of Brazil.

DIX: is interested in echinoderm fisheries

DUBOIS: is studying calcification

ARENDT: is studying the evolution of extinct classes. He is interested in extinct and recent echinoderms in museums.

BLACK: is interested in echinoderm genetics.

BRANSTRATOR: is interested in stenurid stelleroids.

BRETON: is studying Roveacrinida, Astropectinidae, Stauranderasteridae, Goniasteridae

BUCKLAND-NICKS: is studying sperm specificity

BROADHEAD: is studying "blastozoans"

BRUNEL: is studying the echinoderm biogeography of the shelf and slope of the eastern Canadian coast.

CASTER: is studying carpoids.

CHAUVEL: is interested in Cystoids (Rhombifera, Diploporita)

CONSTANBLE: is interested in the Echinoida, Diadematoida, Echinometridae Strongylocentrotidae, Diadematidae.

DAVID: is studying deep-sea biology of echinoderms.

DONOVAN: is interested in extinct pelmatozoans

DRAVAGE: is studying the role of echinoderms in community structure.

DURHAM: is interested in Helicoplacoidea and Eocrinoidea

ESCOUBET: is studying Mediterranean echinoderms

FOELL: is interested in deep-sea echinoderms, particularly in the Clipperton-Clavion Fracture Zone

FRANZEN-BENGTSON: is studying biostratigraphy

GUILLOU: would like to know of studies on the ecology of Anseropoda placenta and Marthasterias glacialis.

GALE: is interested in "somasteroids"

GIUSEFFI: would like to know of recent literature on fossils of the Okalahoma paleozoics and Muldran (L. Miss.) of Indiana; also Cincinnatian and Waldron representatives.

GLUCHOWSKI: is interested in paleobiogeography and stratigraphy

GREEN: is studying Paracrinoidea, Rhombifera, Diploporita. Interested in paleoecology of cystoids, edrioasteroids, paracrinoids, crinoids.

HERRING: is interested in bioluminescence of echinoderms

HILL: is interested in body-wall stability

HOGGINS: is interested in diseases, viviparity

HOTCHKISS: is interested in ray homology, growth gradients, skeletal systems, teratology

HULBERT: is studying Stephanasterias, Asterias, Leptasterias

JAMES: would like to know the present status of Acantaster planci on the coral-reefs of the Indian Ocean

HAEDRICH: is interested in deep-sea echinoderms

JANGOUX: is interested in pathology/parasitism of echinoderms

KELLY: is interested in ontogeny, Rhombiferans

MACZYNSKA: is interested in Spatangoida, Holasteridae

MEIJER: is studying oocyte maturation, fertilization

MARTIN: is studying asterinids

PAWSON: is interested in compiling a list of postage stamps with echinoderms

SMIRNOV: would like to exchange material and reprints concerning asteroids and holothuroids.

LE GALL: is interested in mariculture of echinoderms

LEELING-WERDER: Would like to receive information about papers concerning the echinoderms of the Republica de Cabo Verde.

LUCAS & BIRKELAND: are preparing a resource book on Acanthaster planci

LEWIS: is interested in diseases and pathogens of echinoderms

MAHFOUZ: is studying the population and reproductive ecology of asteroids

MARKEL: is studying calcification

MATURO: says that some of his best friends are echinoderm freaks. and that echinoderms are his next favorite phylum.

HENDLER: hopes that the new list of echinoderm literature will be alphabetized. Was not able to figure out if the last listing was haphazard or truly random. Suggested alibi : "My android dropped it in a hyperimprobability field and it time warped." What, me worry???

MUKAI: suggests a journal on echinoderm biology

WEBB: is studying settlement, post-larval ecology and morphology

WEBER: is interested in Diadematidae

WITMAN: is studying recruitment of echinoids, suspension feeding inophiuriods.

YAMAGUCHI: reports that Acanthaster planci occurred in abundance along the southern coasts of Japan where coral-reefs occurred during the period of A. plani infestation in the Ryukyus. The infestation in the Ryukyus is about to end after degrading most reefs there. Warm current (the Kurosio) may be responsible for this.

WILKIE: is intrested in connective tissues of echinoderms

PARSLEY: is interested in Homostelea, Paracrinoidea, Eocriniods, Rhombiera, Diploprida ; paleoecology

Paul: is interested in cystoids s.l.

PETR: is studying biostratigraphy

PHILIPPE: is studying the miocene echinoids of the Rhone basin

PODDUBIUK: is particularly interested in Clypeasteroida, Cassiduloida, Spatangoida

PROFANT: Is interested in ciliated protozoa parasites of echinoderms

PROKOP: is interested in cystoids and in biostratigraphy

REGNELL: is interested in cystoids

ROZHNOV: is studying Rhombifera, Diploporita, Disparida, Pisocrinacea. is interested in symmetry

SCHELTEMA: is interested in larval ecology and settlement

SCHINNER: is studying spatangoidea, particularly the Loveniidae (e.g. Echinocardium) and Schiza steridae

SILVER: is interested in the cell biology of echinoids and asteroids

SOLOVJEV: is studying the Holasteroida and Spatangoida

STANCYK: is interested in echinoderm life-history patterns

STRATHMANN: is interested in echinoderm life-history patterns

THIERRY: is studying irregular Jurassic groups (Disasteroidea). is interested in biostratigraphy.

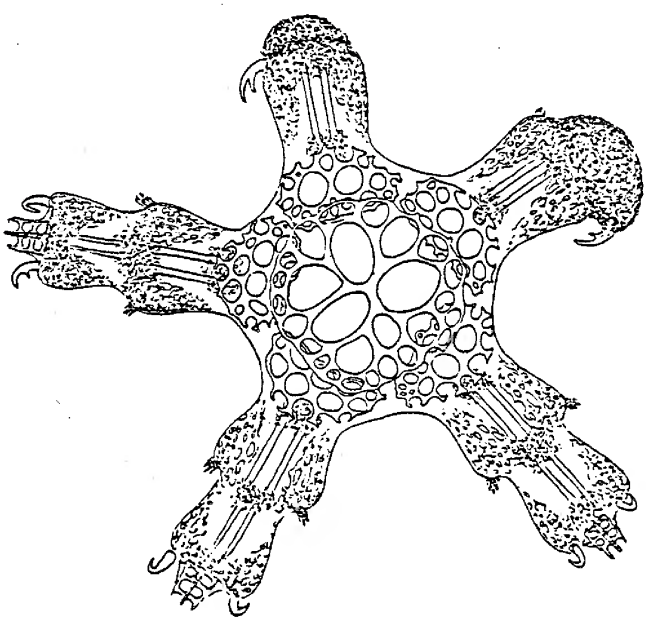
THOMASSIN: is interested in coral reef and tropical benthic assemblages of echinoderms

TWERSKY: is interested in histochemical studies of echinoderms (including ultrastructural aspects, e.g. x-ray microanalysis.

TYLER: is studying deep-sea echinoderms.

UBAGHS: is studying carpoids and blastozoans

MCEUEN: needs English translations of early German works on holothuroid embryology/development. Has an extensive bibliography of holothuroid studies.



Ophiothrix savignyi

Th. Mortensen. 1938. Development and larval forms of echinoderms. IV.

AILSA'S SECTION: Ailsa Clark gently chided me that the last echinoderm newsletter was rather stodgy,with not even a recipe for sea-urchin roes. She was quite right, as usual. This issue of the newsletter initiates a section to remedy the problem. Contributions to the section for future issues are invited. JL

THOUGHTS ON THE TERMINOLOGY OF ECHINODERMS (un cri de coeur) *

by Ailsa M. Clark

Lovely animals though they are, echinoderms raise many problems of terminology for those trying to describe them. Thanks to their metamorphosis from tidy bilaterally symmetrical larvae with 'fore' and 'aft' and 'top' and 'bottom', involving as it does a twist in orientation, radial adults lend themselves uneasily to 'dorsal' and 'ventral' and only the horizontally-stretched holothurians and irregular echinoids have 'anterior' and 'posterior'. Of the five extant classes, crinoids are 'upside down' and comatulids have the ridiculous anomaly of a centrodorsal plate in the middle of the underside. The merging of upper and lower surfaces without demarcation by marginal plates or abrupt change in contour makes reasonable the use of 'aboral' and 'oral' for upper and lower sides of sea urchins. However, asteroids do have marginals or differentiated 'abactinal' and 'actinal' plating which usually corresponds in extent with similarly named sides, although in some species the abactinal plates may wrap round the ambitus on to the outer part of the lower side, while specialists on ophiuroids and crinoids for many years used 'dorsal' and 'ventral' in describing them. Libbie Hyman tried to make all consistent in her classic textbook by extending the terms aboral and oral from echinoids to the other four classes. This may have its merits but, to one reared in the pre-Hyman era, there's something ludicrous about 'oral arm plates' for animals which already have 'oral' tagged on to structures really to do with the mouth and I can't retire from the scene without expressing one small squeak of protest as to the need to carry consistency so far. With so many readers of the newsletter engaged on physiological, reproductive or biochemical studies to do with echinoderms and fewer systematists in regular employment, maybe there's only a minority of us who are really concerned about how best to describe morphological features and this plea may seem like making mountains out of molehills, nevertheless here it is.

When it comes to nomenclature, however, even fewer of you are directly involved in making changes but many could be provoked into calling down curses on the heads of the taxonomists concerned when it all seems unnecessary. As an employee of a national museum, I felt obliged to try and stabilize familiar widely-used names which were threatened by strict application of the rules of nomenclature (maybe as some sort of compensation for juggling around with other names into different combinations or synonymy). This meant drafting very time-consuming proposals addressed to the International Commission on Zoological Nomenclature (ICZN) in the 'legalese' it requires, to ask for 'exertion of its plenary powers' to suspend the rules in certain cases. After spending so long in drafting and rehashing the rules, some commissioners seem extremely reluctant to allow them to be bent in any way, though the ones personally connected with echinoderm work, notably Professor Tortonese, have always been very supportive.

Back in the 1960s, Frank Rowe and I rashly embarked on a proposal to try

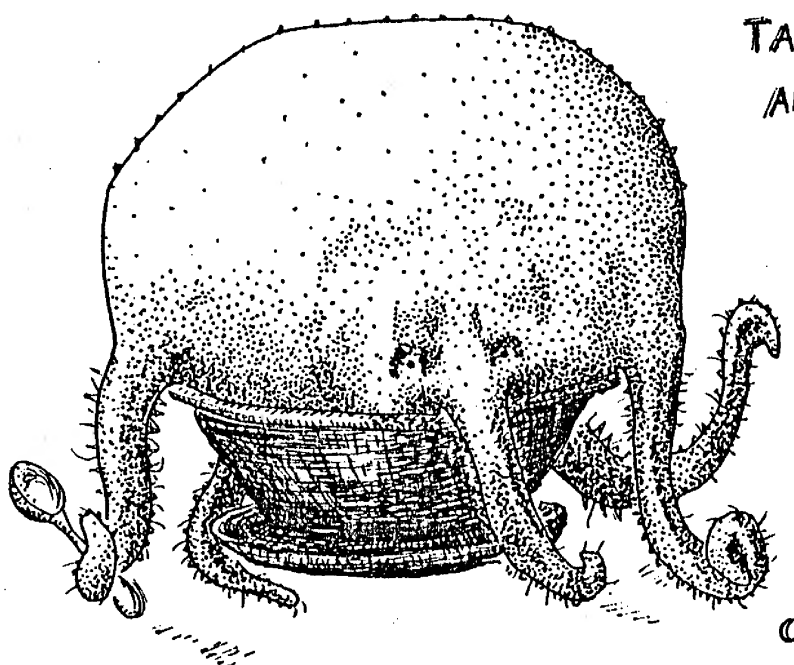
*Included in this section without the knowledge or consent of the author. JL

and ensure that some well-known old holothurian names were saved from possible relegation, only to find a Pandora's box of 'nomina oblita' lurking in the work of Brandt (1835) and others of similar antiquity. A glutton for punishment, I turned then to ophiuroids, finding that Ophiura itself, thanks to an illegal type-species, as well as three of the best-known european brittle-star specific names: Ophiura texturata, Ophiothrix fragilis and Ophiocomina nigra are all strictly untenable under the rules. (Horrified, I stopped at that point only to find later that the equally well-known and worldwide versatile species, featuring in numerous fauna lists as Amphipholis squamata should really be A. elegans, or even Axiognathus elegans if Lowell Thomas's division of Amphipholis is adopted and combined with the rule of priority.) Unfortunately, as the slow mills of the Commission ground on, the case for retaining Ophiura texturata proved to be stymied by my namesake Hubert Lyman Clark, a stickler for the rules, who revived Ophiura ophiura (Linnaeus) for it in 1915 and although Mortensen's protests resulted in other specialists joining him in ignoring the rules in this case, this was unsanctioned by the ICZN (unlike his successful attempt to save Diadema in place of H.L.C's revived Centrechinus). Giving in to Ophiura ophiura going on the Official List of Specific Names blighted my faith in the Commission as a reasonable body, while advancing years provoked the thought that life's too short to spend much time on similar ploys, however altruistic ones intentions. Now it seems to me sufficient to just publicize that a potential problem exists (as with Amphipholis squamata in 1970) and hope that common sense will prevail.

During the recent crisis in funding for continuation of the ICZN and its secretariat, I submitted an idea that the cumbersome set-up could be simplified and speeded up by the individual commissioners - as specialists each on a particular group of animals - coopting several other specialists concerned with that group to deal informally with problems of nomenclature brought to their attention, which could be publicised to others likely to care in newsletters such as this. The Bulletin of Zoological Nomenclature could then be restricted to brief announcements of decisions on names. Predictably I suppose, this idea for economy in expense and time with limitation of problems to those who really care about them, was unacceptable. It is inevitable that classifications and names must change to some extent as our knowledge of animal relationships progresses with new techniques and characters for evaluation but surely avoidable changes should be kept to a minimum.

"In my notebook of 1861, I see "Euryale exigium, Lamk., original of Peron and Lesueur, 1803; young." This prosaic line is poetical for me. It takes me back to the Jardin des Plantes as it was twenty years ago; and I can see the laboratories of the "Mollusques et Zoophytes," where I studied under the kindly direction of old Valenciennes. He has gone, and so has his successor, Deshayes, and their place is now worthily held by Professor Perrier, who was a very young man when I first knew him. But still that poor little broken Astrophyton exiguum lies on its shelf, the survivor of professors and emperors."
Theodore Lyman. 1882. Report on the OPHIUROIDEA dredged by H.M.S. Challenger during the years 1873-1876. p. 257. JL

GORDON HENDLER'S RECIPE FOR MOCK BRITTLESTAR SOUP



TAKE A BIG GULLIBLE BRITTLESTAR AND GENTLY TAUNT IT:
("Where were you when the pedicellariae were handed out?").
THEN LIBERALLY INSULT IT:
("Your sister group is the Echinoidea!").
WHEN THE BRITTLESTAR BEGINS TO SULK, TOSS IT UNCEREMONIOUSLY INTO A BOWL OF TEPID SEAWATER.
SEASON TO TASTE WITH CHIDES OR ASSAULT. IF LEFTOVERS ARE SET ASIDE TO REGENERATE, THE BRITTLESTAR CAN BE MOCKED AGAIN AND AGAIN.

The "uselessness" of echinoderms. (contributed by R.L. Turner)

"The production of animal material on the sea-floor can be regarded as 'useful' or 'wasteful'according to whether it contributes to the formation of commercially-valuable species of fish or other creatures of no value to man. For example, starfish and brittle-stars are not used as human food and are relatively unimportant as fish food; but they are carnivores and compete with fish for the same sort of prey, especially molluscs. The growth of these predatory echinoderms is a wasteful type of production". IN: Tait & DeSanto. Elements of Marine Ecology. Springer-Verlag.

All the way to Bailey's Bay
Fish and taters every day.

Old couplet from Bermuda.

"SEA EGGS OR URCHINS. These are not cherished as a delicacy in Bermuda, but there is a plentiful supply for those who are enterprising enough to extract the succulent meat with a small spoon, touching it up with condiments and sauces to taste.

SEA PUDDINGS. These creatures, called Trepang in the Orient, are, of course, an important Chinese dish, and in the past seamen have risked their lives in the Pacific Islands to obtain a cargo of the valuable Beche de Mer or Trepang for the Chinese market. Members of the Historical Society will remember Captain Lusher's famous yarn about his experiences on such a quest. This fish, if considered at all in Bermuda nowadays, is regarded with contempt, but it was once eaten here, as a recipe of 1846 (which I give with the reservation that the soup would be excellent without any sea pudding whatsoever), clearly shows:

SEA PUDDING SOUP (1846): Let the Trepang lie in a dish for an hour to drain off the salt water. Put 2 quarts water to o6 trepangs and boil for 10 minutes. Throw the water away, and add 2 more quarts of fresh water together with 3 lb veal or beef, some onion and spice, but no salt. Bring the whole to a boil, then simmer for 6 hours. Strain through a collander, add one tablespoon of Catchup or Worcestershire sauce, and a tumbler of white wine."

from: Zuill, Kitty. A Bermuda Kettle of Fish. The Bermuda Book Stores, Hamilton (no date given).

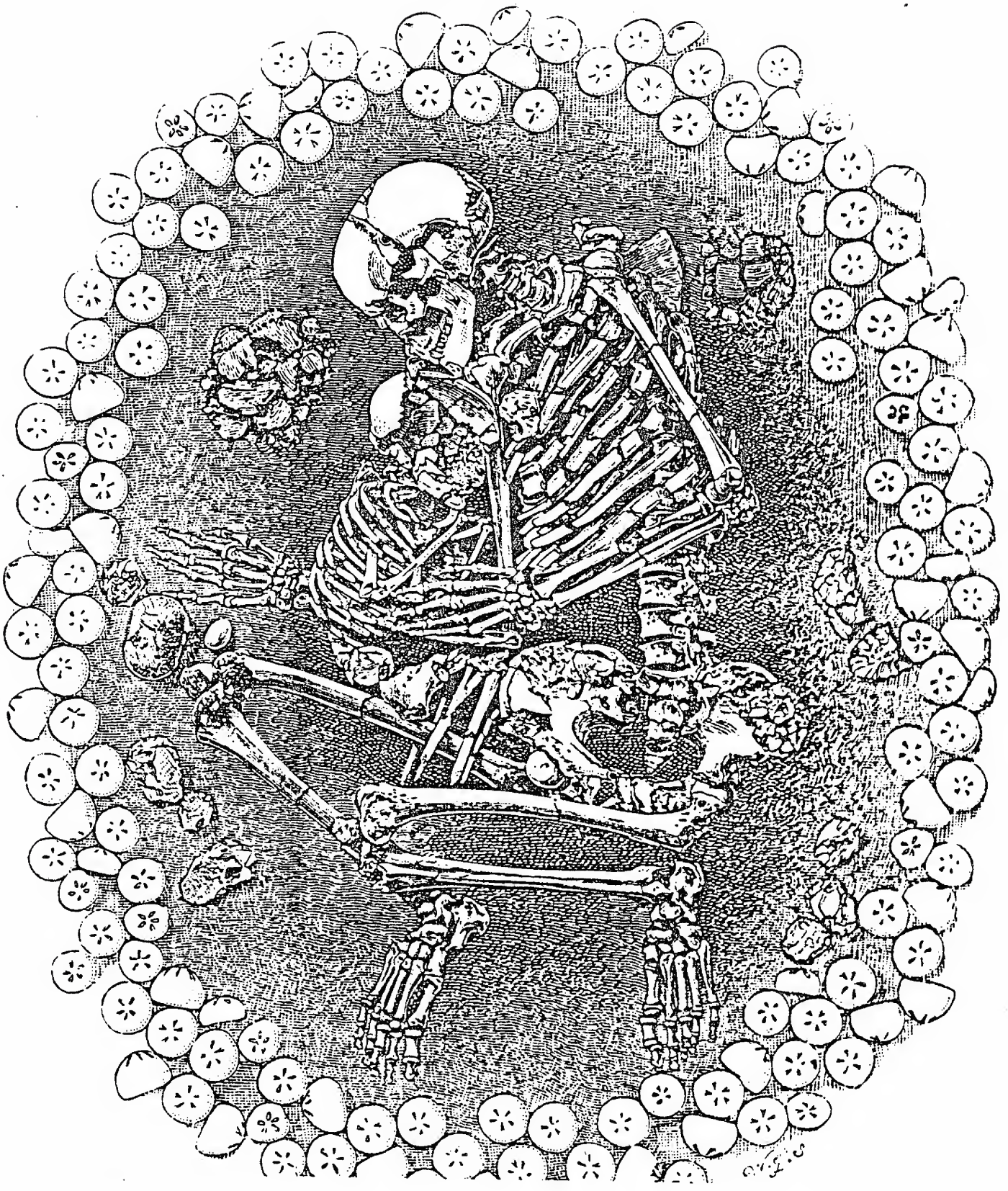
JL

BINKEY AND THE URCHINS

by N.A. Sloan Esq.

I wish to recount an incident between myself, awesome Dave Pawson, Binkey the basset hound and Lytechinus variegatus against the lush tropical background of Mullet Bay, Bermuda. Let me say from the outset that it was Pawson's fault. We all know this certain person of dubious golf skills and innumberable bad jokes. At any rate, I was on a mission of mercy to lead Dr. Possum to rare and precious specimens of the Bermudian L. variegatus. Mine was the thankless task of single-handedly rescuing his foundering collection efforts. Thus, our story finds us proceding to the Bay on wretched motorized bicycles, casting ourselves manfully into the briny deeps containing any number of dire perils and gleaning from nature's treasurehouse the finest speciments of L. variegatus in Christendom. I must at this point in time, however, take one step back and mention that before we defiled the azure waters of Mullet Bay, we requested access to said waters from the good folk who resided on the shore. They possessed a basset hound who was called by the fatuous name 'Binkey'. This was a creature of singular ugliness who bore altogether too much body on too few cm of limbs. Binkey found our presence trying and despised us from the outset. It was after we looted the Bay and loaded up the carrier bags of our pathetic mopeds with heavy jars that Binkey made his move. Out he charged, baying most unpleasantly, and a thrill of terror rushed through two of the finest minds what have ever grappled with your Phylum Echinodermata. There was a regretable lapse of composure as we frantically started our moped. The object was total escape from the wanton bloodlust of that mutant hound. Pawson set off first, of course, and I was left as shark-bait to protect the retreating figure of one of the Smithsonian's finest. Binkey was really a filthy coward for the more we retreated, the more he approached in canine fury. Binkey selected me for death and I selected the highest ground. The fully loaded moped stalled, of course, and I decided to become a Christian to aid my chances with St. Peter in the afterlife. I must report that my tender limbs were not laid open by those gleaming fangs as dear Binkey preferred the fantasy of the chase to the reality of a carcass. I still remember Dr. Pawson's maniacal laughter, from a safe distance, and I must further report that I received not even a hearty cash bonus for my pivotal role in the L. variegatus research. Thus endeth another towering epic in personkinds' search for higher echinoderm knowledge.

This learned essay is dedicated to Ailsa McGowan Clark, the doyenne of British Echinodermata. All for you, Ailsa.



from Worthington G. Smith. 1894. Man, the primeval savage. Edward Stanford, London. Skeletons of a young woman and child from Paleolithic grave at Dunstable Downs. Echinoid species: Ananchytes ovatus Leske and Micraster coranguinum Leske.

Papers presented at the 5th International Echinoderms Conference, Galway, Ireland. 24-29 September 1984.

Lahaye. Spawning and early development in the comatulid crinoid, Antedon bifida (Pennant): an SEM-study.

Roman and Fishelson. Comparision of reproduction in three Red Sea feather--stars Lamprometra klunzingeri, Heterometra savignii and Capillaster multiradiatus.

Tyler, Gage and Billet. Gametogenic strategies in deep-sea echinoids and holothuroids from the N.E. Atlantic.

Lessios. Reproductive periodicity of nine Caribbean species of echinoids in Panama.

Barker. Reproduction and larval development in the brooding echinoid Goniocidaris umbraculum.

Schatt. The development of the oral surface in the embryo of Abatus cordatus, an antarctic brooding sea urchin.

Burke. Pheromonal control of metamorphosis in the Pacific Sand Dollar, Dendraster excentricus.

Rumrill and Chia. Differential mortality during the embryonic and larval lives of two northeast Pacific echinoids, Strongylocentrotus purpuratus and Dendraster excenticus.

Bookbinder and Shick. A respirometric and direct calorimetric study of ovary energy metabolism in Strongylocentrotus droebachiensis.

Moore. Neurophysiological studies on chemoreception in Ophiura ophiura (L) (Echinodermata, Ophiuroidea).

Basch. Interactions between a bioluminescent ophiuroid, Ophiopsila californica and several nocturnal benthic predators.

Emson and Herring. Bioluminescence in deep and shallow water brittlestars.

Clements. Post autotomy feeding behavior of Micropholis gracillima (Stimpson): implications for regeneration.

Smith and Keegan. Seasonal torpor in the dendrochirote Neopentadactyla mixta Ostergren.

McClintock. Size selectivity of prey in Luidia clathrata (Echinodermata: Asteroidea): effect of nutritive condition and age.

Moore. Plagues of starfish: some behavioural and ecological parallels with locusts.

Valentincic and Ota. Comparison of chemical senses in the starfish Marthasterias glacialis (Asteroidea) and in some fishes.

Cobb. Intracellular studies on the nervous system of an echinoderm.

Franzen-Bengtson. Middle Cambrian echinoderms from Sweden.

Donovan. Biostratigraphy and evolution of crinoid columnals from the Ordovician of Britain.

Brower. Ontogeny and functional morphology of two Ordovician calceocrinids.

Parsley and Prokop. Echinosphaerites (Rhombifera) and its community relationships from the Middle Ordovician of Bohemia, Czechoslovakia.

Thierry. Settlement evolution of the Jurassic Paris basin (France). Collyritidae (Echinoidea, Disasteriodea).

Waters and Sevastopulo. A review of the Lower Carboniferous blastoids (Echinodermata) of Ireland and Great Britain.

Poddubiuk. Evolution and adaptation in Caribbean Oligo-Miocene clypeasters (Echinoidea).

Paul and Smith. The early radiation of echinoderms.

Blake. Stability and change in the history of sea stars.

Splechtna and Hilgers. Pedicellariae as a specific character in sea urchin species.

Aziz and Jangoux. Revision of the genus Calliaster Gray, 1840 (Asteroidea: Goniasteridae).

Leeling. Comments on the genus Odonaster (Echinodermata: Asteroidea).

Gage, Billett, Clark, Jensen, Paterson, Pearson and Tyler. Echinoderm distributions in the Rockall Trough (N.E. Atlantic).

Billett and Hansen. Pelagic Holothuroidea of the North-East Atlantic.

Haedrich and Maunder. The Echinoderm Fauna of the Newfoundland Continental Slope.

Pawson and Foell. An annotated atlas of abyssal echinoderms from the Clipperton-Clarion Fracture Zone, equatorial eastern north Pacific.

Sloan. World Echinoderm Fisheries.

Bourseau. La zonation bathymetrique des pentacrines de la marge du Pacifique oriental.

Rowe. Distributional patterns of Australia's tropical echinoderms: a matter of vicarience or dispersalism?

Vadon and Guille. The Ophiuridae family in the bathyal zone of the occidental part of the Indian Ocean: origin and biogeography.

Emson. Bone Idle - a recipe for success?

David. Significance of architectural patterns in the deep-sea echinoids Pourtalesiidae.

Dafni. Test growth and calcification of the regular echinoid Tripneustes gratilla elatensis.

Dubois and Jangoux. The microstructure of the asteroid skeleton (Asterias rubens).

Telford. Structural analysis of the test of Echinocyamus pusillus.

Jensen. Functional morphology of test, peristome, lantern and tube feet in flexible and rigid sea urchins (Echinoidea). A comparative study of feeding and respiratory organs with comments on their evolution.

Lambert. Geographic and age variation of holothurian ossicles.

De Vos. Ultrastructure of the tube feet of the ophiuroid, Amphipholis squamata (delle Chiaje).

Mooi. Anatomy, function and diversity of Clypeasteroid non-respiratory podia.

Regis and Thomassin. Microstructural peculiarities of Asthenosoma varium Grube spines (Echinoidea, Echinothuridae). Affinities with Diadematidae and Toxopneustidae.

de Burg, Fontaine and Singla. Functional organization of the sea urchin spine.

Dotan and Fishelson. Morphology of spines of Heterocentrotus mammillatus (Echinodermata; Echinoidea) and its ecological significance.

Messing. Submersible observations of deep-water crinoid communities in the Straits of Florida.

de Laubenfels. The brittle star, Ophiactis savignyi (Muller & Troschel), an inhabitant of a Pacific sponge, Damiriana hawaiiana.

Sides. Interference competition between brittle-stars?

Hendler. A study of ophiuroid size, abundance and reproductive mode in relation to Coral Reef zones and substrata.

Turner. Annual recruitment in the brackish-water ophiuroid Ophiophragmus filograneus.

Witman. Predation influences the microhabitat distribution of ophiuroids and echinoids in the Rocky Subtidal Zone of the Gulf of Maine, USA.

White, Keegan and Leahy. Growth retardation in the regular echinoid Echinus esculentus L.

Hagen. Sea urchin outbreaks and nematode epizoitics in Vestfjorden, northern Norway.

Harris, Rowley and Witman. A comparison of sea urchin recruitment at sites on the Atlantic and Pacific coasts of North America.

Tertschnig. Sea urchin grazing in sea grass communities: The significance of various plant parameters for the strategy of feeding.

Keats, South and Steele. Ecology of juvenile green sea urchins (Strongylocentrotus droebachiensis) at an urchin dominated sublittoral site.

Scheibling. Mass mortality of Strogylocentrotus droebachiensis (Echinoidea) and increased macroalgal abundance in the rocky subtidal off Nova Scotia, Canada.

O'Connor, Keegan, Costelloe and Bowmer. The Irish Echinoderm Fauna.

Johnson, O'Donoghue and Donlon. Soluble and memberane bound peptide hydrolases of Holothuria forskali digestive tract.

Oudejans, Konings and Voogt. Histochemical localization of NADPH-producing enzymes by the tetrazolium salt method and of acetyl CoZ Carboxylase by a novel peroxydase-labelled avidin method in the storage organs and gonads of the sea star, Asterias rubens.

Nichols and Barker. Role of the body-wall in the nutritional cycle of three English Channel starfish.

Ferguson. Transport of nutrients by the hemal system of the ophiuroid, Ophioderma brevispinum.

Bouland, Yourassowsky and Jangoux. Fine structure and presumed functions of the gastric haemal tufts of the asteroid, Asterias rubens L.

Lawrence. The Energetic Echinoderm.

Stickle. Patterns of nitrogen excretion in seven species of Asteroids.

Watts and Lawrence. The effect of starvation on the level and content of nucleic acids in the pyloric caeca of Luidia clathrata (Say) (Echinodermata: Asteroidea).

Féral. Caloric content of temperate and subantarctic holothuroids at critical stages of their life cycles.

Jost and Rein. Refuges and migration: a stabilizing factor for a local sea star community?

Chiu. Feeding biology of the short-spined sea urchin, Anthocidaris crassispina (Agassiz) in Hong Kong.

Ellers. Oral surface podial feeding in the sand dollar Echinarachnius parma (Lamarck).

De Ridder, Jandoux and Van Impe. Food selection, gut content and absorption rate in the spatangoid Echinocardium cordatum (Echinoidea).

Chia. Selection, storage and elimination of heavy sand particles by the juveniles of the sand dollar, Dendraster excentricus (Eschscholtz).

Ausich and Bottjer. Echinoderm role in the history of phanaerozoic tiering in suspension-feeding communities.

Kalata. Life modes of cornute and mitrate carpoids.

Rose and Olver. Slow evolution in the Holectypidae, a family of primitive irregular echinoids.

Roux. La formation des calcaires a Entroques: regard actualiste.

Beijnink and Voogt. Pathways of nutrient translocation during vitellogenesis in the sea star Asterias rubens.

Broertjes and Voogt. Isolation and characterization of vitellogenic substances in the sea star Asterias rubens (L).

Voogt. Comparison of steroid levels in the gonads and pyloric caeca of male and female Asterias rubens: relation to reproduction.

Caine and Burke. Immunohistochemical localization of gonad-stimulating substance in the sea star Pycnopodia helianthoides.

Ferrand. Acid phophatase during yolk formation and early development in Asterina gibbosa (Echinodermata - Asteroidea).

Penchaszadeh and Layrisse. Ecology of the sand dollar Mellita quinquiesperforata latiambulacra on the west-central coast of Venezuela (Caribbean Sea).

Guillou. The population dynamics of Echinocardium cordatum (Pennant) in the Bay of Douarnenez (Brittany).

Muscat. An experimental evaluation of the effect of holothurian deposit feeding on infaunal communities.

Velimirov. Niche repartition in co-existing sea cucumber species in the kelp bed community.

Sibuet. Quantitative distribution of deep sea detritivorous echinoderms in relation to the available organic matter in the sediment.

Thomassin. The Acanthaster infestations: A step in the damaging-evolution of the Coral Reef Ecosystem.

Conand. Crown-of-thorns starfish in New-Caledonia (South Pacific).

Jangoux. Biotic Diseases of Echinoderms.

Guillou and Guillaumin. Variations in the growth rate of Asterias rubens (L.) illustrated by two populations of west and south Brittany (France).

Young. Consequences of predation by the asteroid Evasterias troschelli in a soft-sediment ascidian community.

Ghiold. The African Sand Dollar, Rotula.

Fenaux, Cellario and Etienne. Ingestion des cellules algales en fonction du developpement de la ciliature chez la larve de l'oursin Paracentrotus lividus.

Mladenov. Development and metamorphosis of the West Indian brittle star Ophiocoma pumila: ecological and evolutionary implications.

Walker and Smith. Use of dissolved organic matter during brooding in Amphipholis squamata; implications for editing the developmental program of the ophiopluteus.

McEuen. Reproductive patterns among northeast Pacific holothuroids.

Miller. Viviparity in a psolid holothurian from the tropical western Atlantic.

Crump and Barker. Sexual and asexual reproduction in geographically separated populations of the fissiparous asteroid Coscinaster calamaria Gray.

Franz. Adaptive aspects of the annual caeca/gonad reproductive cycle in Asterias forbesi.

Larochelle and Walker. Changing properties of somatic accessory and germinal cells during the amitotic/mitotic and premeiotic/meiotic transitions of spermatogenesis in Asterias vulgaris.

Smith. Regulation of spermatogenic proliferation in Asterias vulgaris by polyamines.

Ebert. Regeneration and the significance of growth lines in spines of the slate-pencil sea urchin Heterocentrotus mammillatus.

Ramsay and Campbell. An investigation of the distribution of pedicellariae in Echinus esculentus (L).

Harold. Body-wall structure of Echinarachnius parma (Echinoidea: Clypeasteroida).

McKenzie. The tentacles of dendrochirote holothurians - an SEM study.

Byrne. The fine structure of the autotomy tissues of the holothurian Eupentacta quinquesemita (Selenka) before, during and after evisceration.

Silver. Histology of the anterior autotomy planes in the viscera of Holothuria scabra (Holothuroidea: Aspidochirotida).

Maes. Ultrastructural study of the lesions caused by the bald-sea-urchin disease.

Wilkie and Emson. The tendons of Ophiocomina nigra and their role in arm autotomy: evidence for variable tensility in a type IV collagenous structure.

Motokawa. Catch connective tissues: the connective tissue with adjustable mechanical properties.

Bouland. Activity throughout the year and transportation of the radial nerve gonad-stimulating-substance (GSS) in the asteroid, Asterias rubens L.

Billett and Lampitt. Deep-Sea echinoderms.

Bacallado, Moreno and Perex Ruzafa. Echinodermata (Canary Islands). Provisional Check-list.

Bourgoin. Acrocnida brachiata (Montagu) - Intertidal, subtidal populations - Brittany.

Bowmer. The use of an echinoderm as a substrate in ecotoxicological testing.

Carson and Mladenov. Obligate asexuality in a population of the sea star Stephanasterias albula from the Bay of Fundy.

Cuenca. Paracentrotus lividus (Lamarck) and Psammechinus miliaris (Gmelin) in the intertidal zone of the French Atlantic coast: Introduction to the study of their growth and of their boring activity in siliceous rocks.

Donovan. Myelodactylid crinoids from the Upper Ordovician and Lower Silurian of Europe.

Erber and Strenger. The larval coelom, significant for the characterisation of bipinnaria and brachiolaria in asteroid ontogeny.

Ghiold. Geographic and bathymetric distribution of the clypeasteroids.

De Greef and Jangoux. Ultrastructural aspects of the plutean arm of the echinoid Paracentrotus lividus (Lamarck).

Ghyoot and Jangoux. The globiferous pedicellariae of Toxopneustes pileolus (Lamarck) (Echinoidea).

Guille, Laboute, Menou, Cherbonnier, Feral, Jangoux, Meyer, De Ridder and Vadon. Presentation of the "Guide sour-marin des Echinodermes du recif de Nouvelle-Caledonie".

López-Ibor. Echinoderms of the "Cantabrico 83" expedition off the north coast of Spain (November 1983).

Jangoux, Dubois, Lambert and Yourassowsky. Coelomic microcanaliculae within asteroid ossicles and dermal tissues.

Lahaye and Jangoux. SEM-study of the feeding structures of pentacrine larvae and adult individuals of the comatulid crinoid, Antedon bifida (Pennant).

Lambert and Jangoux. Investigations on movement and excitability of the rosettes of crossed pedicellariae in the asteroid, Marthasterias glacialis (L.).

Meyer. Palaeoecology of a Late Jurassic echinoderm community from the Swiss Jura mountains.

Nagaoki. Comparative analyses of free amino-acid composition in eggs/ovaries of sea urchins (the subclass Regularia).

De Ridder and De Vos. Bacterial pellets in the intestinal caecum of Echinocardium cordatum (Echinoidea): structure and X-ray analysis.

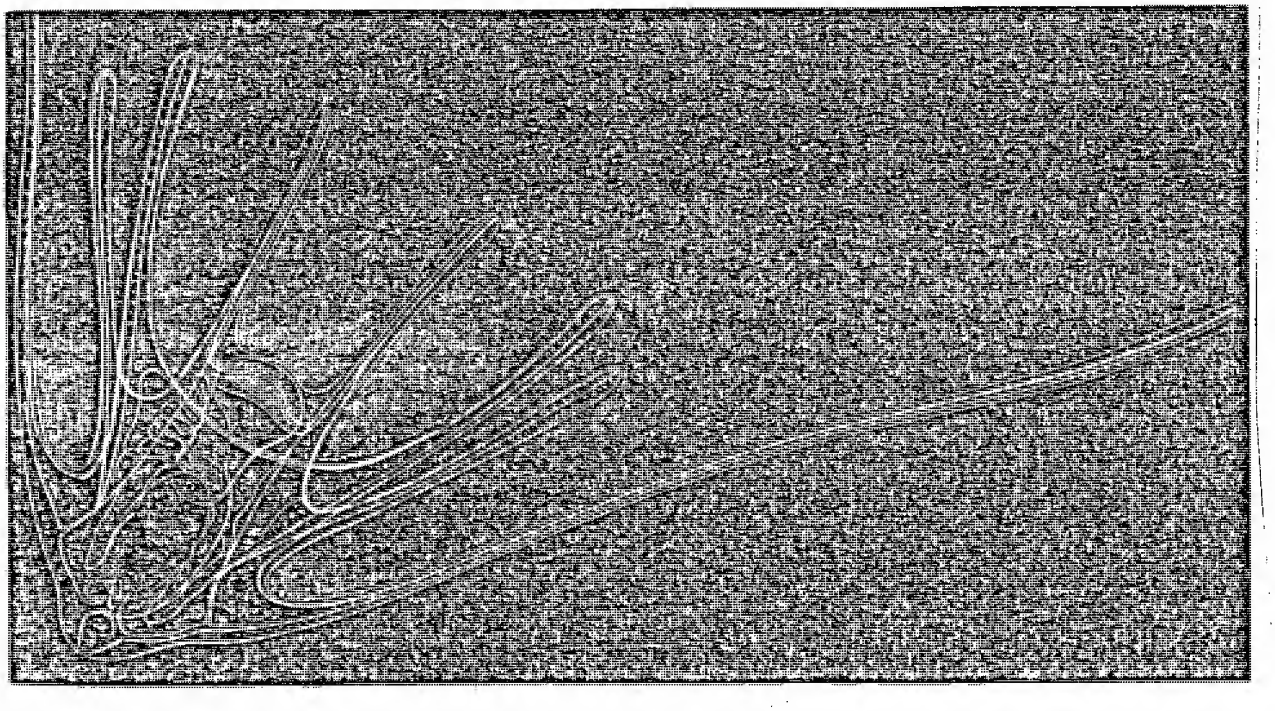
Scheibling and Jones. Disease and mass mortality in Strongylocentrotus droebachiensis (Echinoidea) off Nova Scotia, Canada.

Simms. The genus Balanocrinus in the British Lower Jurassic.

Vandon, Ferrand, Féral and Guille. Preliminary reports on reproduction of Mediterranean echinoderms collected between 0 and 1000 metres, during the "ECOMARGE programme".

Yanagisawa. Base sequence complexities of DNA prepared from spermatozoa of Clypeasteroid and Spatangoid urchins.

Yourassowsky. Development of the larval coelom in the asteroid, Asterias rubens L.



Elizabeth C. Agassiz & Alexander Agassiz. 1865. Seaside Studies in Natural History.

Papers presented at the annual meeting of the American Society of Zoologists, Denver, 1984. Abstracts published in American Zoologist, 24 (3).

Chen, CP, JM Lawrence. Localization of carbonic anhydrase in the plumula of the tooth of Lytechinus variegatus (Lamarck) (Echinodermata:Echinoidea). p.14A.

Cavey, MJ. Organization of the coelomic lining in the tubefoot of a phanerozonian starfish. p. 15A.

Thomas, LA, CO Hermans. Suction is not the answer: evidence for the duo-gland adhesive system in starfish tubefeet. p. 15A.

Herrlinger, TJ. Kelp forest prey refugia: an interaction among gastropods, cnidarians, and sea stars. p. 24A.

McEuen, FS. Chemical and morphological defenses of holothuroid eggs, larvae, and juveniles. p. 25A.

Klinger, TS, JM Lawrence. Food and movement of Lytechinus variegatus (Lamarck) (Echinodermata:Echinoidea). p. 29A.

Roller, RA, WB Stickle. Salinity effects on the tolerance and early developmental rates of four species of echinoderms. p.30A.

Zmarzly. DL. Resource partitioning and coexistence of pontoniine shrimps associated with crinoids at Enewetak Atoll, Marshall Islands p. 41A.

Emlet, RB. Facultative planktotrophy in a tropical sea biscuit, Clypeaster rosaceus: advantages of larval feeding. p. 45 A.

McEdward, LR. Some relationships between egg size and the allometry of larval growth in echinoid plutei. p. 46A.

Rumrill, SS. Correlations between development rate and predator susceptibility in larvae of five temperate echinoderms. p46A.

Cameron, RA. Response to temperature and salinity by embryos of four Caribbean sea urchins. p. 46A.

Odum, MA, AC Dempsey, JR Moyer. Between-habitat food selection by regular sea urchins (Echinoidea). p.87A.

Watts, SA, TT Arja, JM Lawrence. The effects of 17B-estradiol and feeding-level on growth of the pyloric caeca in Luidia clathrata (Echinodermata: Asteroidea). p.93A.

Oppenheimer, SB, M Alikani, A Ransick, S Liang, K McCray, M Lemell, E Azzam, B Burgess. Fluorescence localization of sea urchin embryo extracellular components. p. 100A.

Pennington, JT. The ecology of fertilization of echinoid eggs: the consequences of sperm dilution, adult aggregation and synchronous spawning. p.130A.

Sinervo, BR, LR McEdward, RR Stratnmann. The effect of experimental reduced egg size on form, function and rate of development of planktotrophic larval echinoids. p.131A.

Smiley, S. Metamorphosis in the holothurian Stichopus californicus. p.131A.

Bosch, T, KA Beauchamp, ME Steele, JS Pearse. Slow developing feeding larvae of a common Antarctic sea urchin reared through metamorphosis. P.131A.

Muscat, AM. An experimental evaluation of the effect of holothurian deposit feeding on infaunal communities. p. 139A.

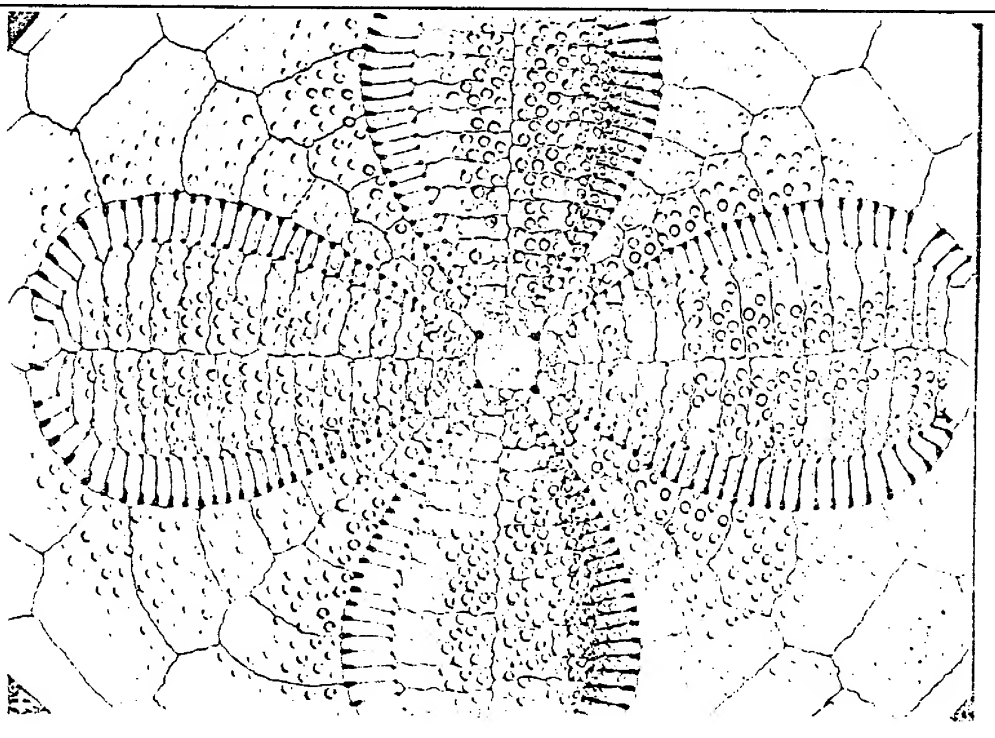
Dalby, JE. Significance of swimming in the sea anemone Stomphia didemon in response to contact with certain asteroids. p. 144A.

Papers presented at the annual meeting of the Florida Academy of Sciences, St. Leo. 1985. Abstracts published in Florida Scientist. 48(Suppl. 1).

Klinger, TS, HL Hsieh, RA Pangallo, CP Chen, JM Lawrence. The effect of temperature upon feeding, digestion, and absorption of Lytechinus variegatus (Lamarck)(Echinodermata:Echinoidea). p. 30.

Forcucci, D, JM Lawrence. The effects of salinity on the feeding rate, growth, and activity of Luidia clathrata (Echinodermata:Asteroidea). p. 30.

Estabrooks, WA, RL Turner. Ultrastructure of spermatozoa of four brackish-water echinoderms p. 31.



I. Taki (1929) Clypeaster japonicus

THESES AND DISSERTATIONS

Many theses and dissertations are never published and many echinoderm specialists are consequently unaware of them. This is unfortunate because considerable effort is involved in their production and considerable worthwhile information is contained in them. In addition, few theses or dissenations are published in their entirety. The contents of theses and dissertations are often much more developed than published articles. There is a wealth of information concerning echinoderms found in these dissertations which could be used to great advantage by echinoderm specialists. The list is also of interest historically, because it shows very well the development of echinoderm biology.

Titles of dissentations and theses have appeared in issues 3, 4, 6, 7, 8, 11, 13, and 14 of the newsletter. By next summer it will be possible to obtain by request a listing of theses and dissertations according to taxonomic class, subject, and geognaphical region.

Relatively complete lists are available for Australia, Canada, France, Switzerland, and the United States. It is unfortunate that the list is incomplete, and sometimes completely lacking, for many countries. I invite echinoderm specialists to send me citations to theses and dissertations in their countries so that we will be aware of the contributions made there. JL

Australia (communicated by A.J. Butler, A. Constable, J.S. Lucas, A.J. Underwood)

B.Sc. theses

Keough, MJ. 1976. The role of asteroid predators in determining the structure of jetty pile communities. Univ. of Adelaide.

Masters theses

Aung, M. 1975. Observations on the reproductive biology of the tropical sand dollar Arachnoides placenta (L.). James Cook Univ. of North Queensland.

Dartnell, AJ. 1971. The taxonomy and biogeography of the sea star genus Patiriella in Tasmania. Univ. of Tasmania.

Davies, MM. 1935. 1. Variation, 2. Holothuroidea. Univ. of Melbourne.

Duyverman, H. 1976. Factors influencing the local distribution of the seastar Patiriella exigua. Flinders Univ. of South Australia.

O'Connor, CP. 1976. Reproductive periodicities of the echinoids Centrostephanus rodgersii, Phyllocanthus parvispina, Tripneustes gratilla and Heliocidaris tuberculata in the light of some ecological variables among the Solitary Islands. Univ. of New England.

Penn, PE. 1978. Growth and structure of the sensory cushion in a marine asteroid: The fine structure of the optic cushion in Nepanthia belcheri. James Cook Univ. of North Queensland.

Rainer, AG. 1975. Section one: Literature review - Hybrid inviability in the phyla Chordata, Echinodermata and Arthropoda. Section two: Research report - hybrid inviability in some members of the subfamily Monabinae (Orthoptera: Eumastacidae). Univ. of Melbourne.

Williams, DH. 1975. The reproductive cycle, the embryonic and larval development and the metamorphosis of Heliocidaris erythrogramma Echinoidea. Univ. of Sydney.

Ph.D. dissertations

Fletcher, WJ. 1985. Experimental population ecology of sublittoral grazers in New South Wales. Univ. of Sydney.

Franklin, SE. 1980. The reproductive biology and some aspects of the population ecology of the holothurians Holothuria leucospilota (Brandt) and Stichopus chloronotus (Brandt). Univ. of Sydney.

United States

Masters theses

Basch, LV. 1985. Ecology, behavior, and functions of bioluminescence in the subtidal, sand dwelling ophiuroid Ophiopsila californica. Univ. of California, Los Angeles.

Bookbinder, LH. 1984. Anaerobic and aerobic energy metabolism in ovaries from the sea urchin Strongylocentrotus droebachiensis. Univ. of Maine.

Boyce, MW. 1956. The micropaleontology of the Osgood Formation (Niagaran)in Ripley County, Indiana. Indiana Univ.

Breitburg, DL. 1982. Development of a subtidal epibenthic community: effects of grazing, temporal variability and prior residency. Univ. of California, Santa Barbara.

Hanson, JL. 1985. Hydrodynamics of perivisceral fluid circulation in the sea urchin Lytechinus variegatus with special reference to material transport. Univ. of South Florida.

Donachy, J.E. 1984. Arm regeneration in the brittle star Ophiothrix angulata (Say): salinity and calcium concentration effects and ultrastructure of ossicle formation. Univ. of South Carolina. 31

Herrlinger, TJ. 1983. The diet and predator-prey relationships of the sea star Pycnopodia helianthoides (Brandt) from a central California kelp forest. San Jose State Univ.

Jillson, D. 1973. The predatory behavior of Pisaster ochraceus. Univ. of the Pacific.

Mayer, RM. 1980. A study of the population ecology of three nearshore communities of the sea urchin Strongylocentrotus polyacanthus. Univ. of Washington.

Ph.D. dissertations

Aboukarsh, NA. 1984. Characteristics of sea urchin sperm chromatin. Univ. of Alabama, Birmingham

Brett, CE. 1978. Systematics and paleoecology of Late Silurian (Wenlockian) pelmatozoan echinoderms from western New York and Ontario. Univ. of Michigan.

Carpenter, CD. The messages and genes encoding calcium-binding proteins in the embryonic ectoderm of the sea urchin. Indiana Univ.

Carpenter, RC. 1984. Herbivores and herbivory on coral reefs: effects on algal community biomass, structure, and productivity. Univ. of Georgia.

Chen, C-J. 1983. A study of the longitudinal body wall muscle of the sea cucumber Sclerodactyla briareus. Univ. of Rhode Island.

Dinnel, PA. 1984. Development, refinement, and validation of a sperm cell bioassay for toxicity assessment of marine waters. Univ. of Washington (echinoids).

Heilmann, LJ. 1984. The distribution of mRNA sequences between polysomes and ribonucleoprotein particles of sea urchin embryos. Wesleyan Univ.

Ho, K-C. 1984. The boundaries of the 33S ribosomal RNA precuson of sea urchin Lytechinus variegatus. Univ. of North Carolina, Chapel Hill.

Hollenbeck, PJ. 1983. Studies of mitosis in the sea urchin egg: microtuble distribution through the cell cycle and the role of dynein. Univ. of California, Berkeley.

Johnson, PJ. 1984. A molecular comparison of actin genes in sea urchins (Strongylocentrotus franciscanus, S. purpuratus, and Lytechinus pictus). Univ. of Michigan.

Kew, DA. 1984. Cultured sea urchin embryo epithelia and mesenchymal cells differ in adhesiveness, lectin agglutinability and lectin receptor mobility. Wesleyan Univ.

Lamain, AP. 1984. The fossil and recent shallow water irregular echinoids from Chile. Univ. of Southern California.

McEdward, L. 1984. On growth and form of echinoplutei. Univ. of Washington.

Peters, NK. 1984. Actin gene expression in the developing sea urchin. Univ. of Michigan.

Podell, SB. 1984. Identification, purification, and characterization of a membrane protein from sea urchin sperm that interacts with egg jelly and regulates sperm acrosome reaction. Univ. of California, San Diego.

Rondinelli, E. 1984. Developmental changes and experimental alterations in the expression of a sea urchin gene abundantly transcribed in the early stages of embryogenesis (Univ. of Pennsylvania.

Smith, RH. 1984. Sea urchin primary mesenchyme development: inactivation of cell-cell adhesion molecules and appearance of cell-substrate adhesion molecules. Wesleyan Univ.

Steinberg, PD. 1984. Phenolic compounds in brown algae: chemical defenses against marine herbivores. Univ. of California, Santa Cruz (echinoids).

Suprynowica, FA. 1984. The calcium sequestering system of the sea urchin embryo and its fluctuation during the cell division cycle. Univ. of California, Berkeley.

Uzman, JA. 1983. An investigation into the acceleration of the rate of RNA synthesis at the fourth cleavage of the sea urchin zygote. Univ. of California, Berkeley.

Witman, JD. 1984. Ecology of rocky subtidal communities: the role of Modiolus modiolus (L.) and the influence of disturbance, competition, and mutualism. Univ. of New Hampshire (echinods, asteroids, ophiuroids)

Ziegler, ME. 1984. Characterization of the 5' end of cloned actin genes and their developmental expression in sea urchin embryos. Univ. of Michigan.

France

These d'etat

David, B. 1985. La variation chez les Echinides Irréguliers. Dimensions ontogenétiques, écologiques, évolutives. Univ. of Dijon.

Féral, J.-P. 1985. Nutrition chez un invertébré marin detritivore: Leptosynapta galliennei (Holothuroidea : Echinodermata). Univ. Pierre et Marie Curie (Paris-6).

Canada

Bachelors theses

McDaniel, N. 1971. The starfish Solaster dawsoni as a predator of asteroids. Univ. of British Columbia.

Masters theses

Mooi, R. 1983. Morphology, divsersity and functioning of non-respiratory podia of clypeasteroids. Univ. of Toronto.

Ph.D. dissertation

Bedard, AP. 1984. Regulation of patterns of protein synthesis during sea urchin embryogenesis. McGill Univ.

Fay, IC. 1983. Paleoecology of Lower Silurian bioherms, Manitouba Island, Ontario. Univ. of Saskatchewan (crinozoans).

Tufano, F. 1984. Expression of maternal and zygotic genes during sea urchin embryogenesis. McGill Univ.

Republic of South Africa

Masters theses

Blankley, WO. 1982. The intertidal and shallow subtidal food web of sub-Antarctic Marion Island. Univ. of Cape Town (asteroids).

Greenwood, PJ. 1974. Population dynamics and ecological energetics of Parechinus angulosus at Robben Bay and False Bay, South Africa. Univ. of Cape Town.

Jamaica

Ph.D. dissertations

Sides, EM. 1981. Aspects of space utilization in shallow-water brittle-stars (Echinodermata:Ophiuroidea) of Discovery Bay, Jamaica. Univ. of West Indies.

Sri Lanka

Master's thesis

Krishnarajah, P. Studies on ecology and some aspects of the biology of Sri Lankan holothurians. Univ. of Jaffna.

United Kingdom (contributed by A. Campbell, A.R. Fontaine, R. H. Padgett, E.P.F. Rose, A.B. Smith, P.A. Tylen, IC Wilkie)

Masters theses

Morrison, GW. 1979. Studies on the ecology of the sub-antarctic ophiuroid Ophionotus hexactis. Univ. of London.

Doctoral dissertations

Campbell, AC. 1971. Studies on some effector organs in echinoderms. Univ. of Oxford.

Challis, GR. 1980. Palaeoecology and taxonomy of Maltese mid-Tertiary echinoids. Univ. of London.

Fontaine, AR. 1961. The functional significance of some species characteristics in ophiuroids. Univ. of Oxford.

Gonzula, SJF. 1976. The ecology of Ophiocomina nigra (Abildgaard) in the Firth of Clyde. Univ. of London.

Johnson, J. 1972. The biology of Amphiopholis squamata (delle Chiaje). Univ. of Newcastle upon Tyne.

Pagett, RH. 1978. Some physiological and ecological aspects of the penetration into brackish water by certain members of the Ophiuroidea. Univ. of London.

Pain, SL. 1983. Aspects of gametogenesis in deep sea Asteroidea from the Rockall Trough. Univ. College of Swansea.

Peters, BH. The neurobiology of spines and pedicellariae from Echinus esculentus L. Univ. of London.

Ramsey, RE. 1935. An investigation of pedicellarial distribution and size in Echinus esculentus L. Univ. of London.

Rose, EPF. 1966. The functional significance of variation in some Tertiary echinoids. Univ. of Oxford.

Scurry, DGA. 1979. A quantitative study of variation within the Mesozoic echinoid Nucleolites. Univ. of London.

Sloan, NA. 1977. An experimental study of the predatory and

social behaviour of Crossaster papposus (L.). Univ. of London.

Smith, AB. 1978. The construction and functional morphology of the echinoid test. Univ. of Exeter.

Tyler, PA. 1976. The ecology and reproductive biology of the genus Ophiura with special reference to the Bristol Channel. Univ. College of Swansea.

Webb, CM. 1984. Seasonal variation and settlement of some marine benthic invertebrate larvae on sediments. Univ. College of Swansea.

Wilkie, IC. 1976. A study of the process of ophiuroid arm autotomy. Univ. of Glasgow.

Spain

Licenciatura theses

Munar, J. 1983. Contribución al conocimiento de los Equinodermos actuales en Mallorca. Univ. of Palma de Mallorca.

New Zealand

Doctoral dissertations

Crump, RG. 1969. Aspects of the biology of some New Zealand echinoderms: Feeding, growth and reproduction in the astenoids, Patiriella regularis (Verrill) and Coscinasterias calamaria (Gray). Univ. of Otago.

Schiel, DR. 1981. A demographic and experimental evaluation of plant and herbivore interactions in subtidal algal strands. Univ. of Auckland (echinoids).

Mexico

rofessional theses

Caso, ME. 1943. Contribución al conocimiento de los Astéridos de Mexico. Univ. Nacional de Mexico.

Doctoral dissertations

Caso, ME. 1961. Los Echinodermos de México. Univ. Nacional Autónoma de México.

Federal Republic of Germany

Masters theses

Leeling-Wender, B. 1981. Zur Phylogenie der Echinodermata unter besonderer Berücksichigung der Echinoidea. Univ. of Hamburg.

Doctoral dissertations

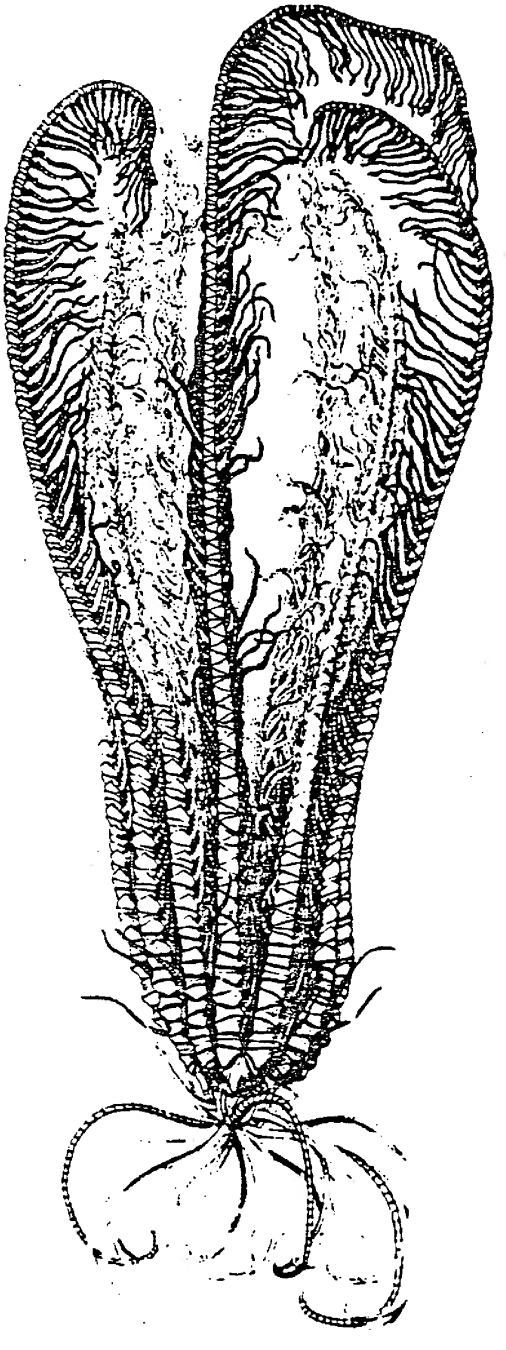
Steinbrück, H. 1902. Über die Bastardbildung bei Strongylocentrotus lividus (male) and Sphaerechinus granularis (female). Univ. of Rostock.

People's Republic of China (contributed by Y. Liao)

Theses

Song, S. 1985. Studies on the astropectinid sea-stars of China. Inst. of Oceanology, Academia Sinica.

Yang, S-Q. 1983. Echinoid fauna of the Cretaceous in Tibet. Nanjing Inst. of Geology and Palaeontology, Academia Sinica.



Antedon eschrichtii. Duncan & Sladen 1881.

Japan (contributed by Keiichi Takahasi, H. Mukai -with assistance of S. Goshima, E. Kikuchi, I. Hayashi, M. Sato, and M. Tsuchiya -, and with additions by K. Kawamura and M. Yamaguchi)

Bachelor's thesis:

Ikema, T. 1980. Behavior of coral-reef echioids, Pseudoboletia maculata, Toxopneustes pileolus, and Tripneustes gratilla. (Toxopneustidae). Univ. of the Ryukyus.

Master's theses

Matsuoka, N. 1977. Studies on starfish hexose 6-phosphate dehydrogenase. Hokkaido Univ.

Watanabe, T. 1966. Studies on the polyspermy of sea urchin eggs. Tohoku Univ.

Sugiyama, K. 1969. Studies on mucopolysaccharides in the early embryogenesis of sea urchins. Tohoku Univ.

Kyozuka, K. 1978. Gamete affinity in marine invertebrates. Tohoku Univ. (includes asteroids and echinoids)

Tsubouchi, I. 1981. Sperm reception in embryonic cells of sea urchins. Tohoku Univ.

Yamada, H. 1983. The role of germinal vesicle factors in starfish egg maturation. Tohoku Univ.

Furukawa, J. 1977. Induction mechanism of acrosomal reaction in jelly-less eggs of sea urchin. Ochanomizu Univ.

Okada, N. 1977. Species specificity of sea urchin sperm in acrosomal reaction. Ochanomizu Univ.

Yano, Y. 1980. Sliding velocity between outer doublet microtubules of sea urchin sperm flagella. Ochanomizu Univ.

Arakawa, S. 1981. Shape of microtubules in solutions: Outer doublet microtubules and its bundles of sperm flagella. Ochanomizu Univ. (echinoids)

Ishii, M. 1983. Effect of divalent cations on sliding movement of sea urchin sperm flagella. Ochanomizu Univ.

Shimoda, S. 1977. Quantitative measurements of intracellular structures by polarization and interference microscopy. Tokyo Inst. Tech. (includes echinoids)

Shôji, Y. 1977. Mechanical properties of the endoplasm in starfish oocytes. Tokyo Inst. Tech.

Nakamura, S. 1978. Mechanical properties of the cell surface in starfish eggs. Tokyo Inst. Tech.

Ishijima, S. 1979. Mechanical properties of flagella. Tokyo Inst. Tech. (includes echinoids)

Nakano, Y. 1983. Mechanism of chromosome movement. Tokyo Inst. Tech. (includes echinoids)

Kuwahara, T. 1981. Studies on differentiation of muscular cells in the starfish larva. Ehime Univ.

Muto, Y. 1981. Effects of hexyleneglycol on microtubule formation in the sea urchin activated egg. Ehime Univ.

Hirata, A. 1983. Studies on cleavage and development of the fused egg by polyethyleneglycol in sea urchin. Ehime Univ.

Kanatani, K. 1985. Studies on formation of the subcortical fiber structure at the time of initiation of the sea urchin development. Ehime Univ.

Nojima, S. 1975. Estimation of population production of a sea star Astropecten latespinosus Meissner. Kyushu Univ.

Tamura, R. 1983. The shallow water crinoids and their commensal animals. Univ. of Ryukyus.

Hayashi, Y. 1985. Effects of ionic environment on the viscosity of the dermis of the sea cucumber Holothuria leucospilota. Univ. of Ryukyus.

Hirai, S. 1969. Effects of protein synthesis inhibitors on the break down of the germinal vesicle in starfish oocytes. Tohoku Univ.

Hirano, H. 1985. Reproductive cycle of the sand dollar Scaphechinus mirabilis (A. AGASSIZ). Univ. Hokkaido.

Horio, Y. 1982. Studies on the reproductive cycle of a sea urchin, Strongylocentrotus intermedius. Univ. Hokkaido.

Ishizaki, J. 1977. Growth and food consumption of a starfish, Asterias amurensis. Univ. Hokkaido.

Kananiwa, M. 1984. Lipids of Echinoidea, specifically unusual fatty acids. Univ. Hokkaido.

Kim, E. 1965. Ecological studies on the reproduction of Asteroidea. Univ. Hokkaido.

Kogori, T. 1965. On the oxygen activity of contractile protein in longitudinal muscle of the sea cucumber. Tohoku Univ.

Maeda, T. 1960. Differentiation mechanism of polarity in the sea urchin embryos. Tohoku Univ.

Miura, S. 1985. Development of holoblastic embryo in the sea urchin. Kagoshima Univ.

Morisita, M. 1985. Fundamental studies on the invention of Asterioidea-traps. Univ. Hokkaido.

*Narita, T. 1965. Fine structure of egg surface of the sea urchin. Tohoku Univ.

Shimizu, M. 1969. Seasonal decrease of the protein concentration and electrophoretic decline of the acid mucopolysaccharide fraction in the perivisceral fluid of a sea urchin, Strongylocentrotus intermedius, corresponding to the peiod of the cessation of test growth. Univ. Hokkaido.

Sida, H. 1965. Fine structure and movement mechanism of longitudinal muscle of the sea cucumber. Tohoku Univ.

Ohtsubo, H. 1985. Regional difference in mechanical properties of the cell surface in dividing echinoderm eggs. Tokyo Inst. Tech. (includes echinoids and asteroids)

Igarashi, Y. 1971. Studies on precursor protein of microtubules in mitotic apparatus. Univ. of Tokyo. (echinoid)

Kaneko, H. 1971. Membrane potential of sea urchin eggs and effect of external ions. Univ. of Tokyo.

Kaneko, T. 1971. DNA content of sea urchin eggs. Univ. of Tokyo.

Kubota, J. 1972. Electron microscopic studies on the reproductive mechanism in the starfish. Univ. of Tokyo.

Murofushi, H. 1972. Studies on deoxythymidine kinases in sea urchin egg. Univ. of Tokyo.

Higashi, A. 1973. Changes in physical properties of the membrane and the cytoplasm of sea urchin eggs upon fertilization. Univ. of Tokyo.

Hoshino, M. 1973. Studies on dynein from sea urchin flagella. Univ. of Tokyo.

Ii, I. 1973. Glutathione reductase in the sea urchin egg. Univ. of Tokyo.

Kishimoto, T. 1973. Effects of SH-related reagents on the maturation of starfish eggs.

Nakamura, I. 1973. X-ray-induced mitotic delay in sea urchin eggs. Univ. of Tokyo.

Nonaka, M. 1974. Studies on thymidine kinase activities in unfertilized sea urchin eggs: Possible activation mechanism upon homogenization. Univ. of Tokyo.

Nozawa, A. 1974. Naturally occurring polyamines and polarity of sea urchin embryo. Univ. of Tokyo.

Shioda, M. 1975. Division delay induced by UV irradiated sperm and its photo-recovery in sea urchin eggs. Univ. of Tokyo.

Hidaka, M. 1976. The fine structure and the mechanical properties of the catch apparatus of the sea-urchin spine. Univ. of Tokyo.

Ejima, Y. 1977. Developmental abnormalities and its photorecovery in sea urchin embryos originated from UV-irradiated sperm. Univ of Tokyo.

Naruse, H. 1977. Inhibitory factor of microtubule assembly in sea urchin egg cortex. Univ. of Tokyo.

Hayashi, H. 1981. Studies on the contraction of longitudinal muscle and its regulation system in Stichopus japonicus. Tohoku Univ.

Akasaka, K. 1978. Pattern of sulfated glycans in developing sea urchin embryos. Univ. of Tokyo.

Maeda, R. 1978. Nervous control and coordination of the catch apparatus in sea-urchin spines. Univ. of Tokyo.

Shingyoji, C. 1978. Studies on the mechanism of flagellar motility by local reactivation experiments with demembranated sea urchin spermatozoa. Univ. of Tokyo.

Deguchi, K. 1979. Role of RNA polymerase in development of animal embryos. Univ. of Tokyo. (sea urchin)

Kamimura, S. 1980. A quantitative study of microtubule sliding in sea-urchin sperm flagella. Univ. of Tokyo.

Ishiguro, K. 1981. Studies on regulatory mechanism of flagellar movement. Univ. of Tokyo. (echinoids)

Yamaguchi, M. 1982. Changes in the intracellular proteoglycans during the early stages of development of sea urchins as determined by means of SDS-polyacrylamide gel electrophoresis. Univ. of Tokyo.

Taniguchi, Y. 1983. Effects of vegetalizing (Li^{+}) and animalizing (Zn^{2+}) reagents on the pattern of acidic glycans in sea urchin (Hemicentrotus pulcherrimus) embryos. Univ. of Tokyo.

Toriyama, M. 1984. Studies on microtubules and microtubule-organizing center in mitotic cells. Univ. of Tokyo. (echinoids)

Watanabe, N. 1984. Studies on protein factors regulating initiation of DNA synthesis in sea urchin embryos at early cleavage stage. Univ. of Tokyo.

Niitsu, N. 1985. Regulatory mechanism of flagellar movement in starfish spermatozoa. Univ. of Tokyo.

Oiwa, K. 1985. Mechanical analysis of microtubule sliding in sea urchin sperm flagella. Univ. of Tokyo.

Sakurai, T. 1985. Studies on DNA methylation in sea urchin embryos. Univ. of Tokyo.

Yonemura, S. 1985. Actin filament organization in the sea urchin egg cortex. Univ. of Tokyo.

Iwaikawa, Y. 1965. Submicroscopical study on the formation of cilia in the sea urchin blastula. Nagoya Univ.

Tsukahara, J. 1966. Ultrastructural changes in the surface of the oocyte during oogenesis of the sea urchin. Nagoya Univ.

Suzuki, S. 1961. Effects of chelator on the early development of the sea urchin. Tohoku Univ.

Tomita, S. 1975. Studies on sterol of coelenterates and echinoderms. Kagoshima Univ.

Nakashima, S. 1967. Incorporation of amino acid into sea urchin eggs stimulated insufficiently with an activating reagent. Nagoya Univ.

Kato, K. 1971. On the de novo formation of centriole in the activated sea urchin egg. Nagoya Univ.

Tanaka, Y. 1975. Effects of surfactants on the cleavage and further development of the sea urchin eggs. The inhibition of micromere formation at the fourth cleavage. Nagoya Univ.

Masuda, M. 1977. Species specific pattern of ciliogenesis in developing sea urchin embryos. Nagoya Univ.

Hirano, K. 1978. Aster inducing activity and cleavage inducing activity of sperm fractions. Nagoya Univ.

Takahashi, T. C. 1979. On the effects of heavy water (D_2O) upon the time course of mitosis and mitotic spindle in developing sea urchin eggs. Nagoya Univ.

Terashita, S. 1982. Kinetic properties of dynein ATPase from sea urchin sperm. Nagoya Univ.

Itoh, T. J. 1983. The effect of D_2O on the polymerization of tubulin *in vitro*. Nagoya Univ. (echinoids)

Araki, K. 1984. Effects of serum components on the *in vitro* differentiation of micromeres. Nagoya Univ. (echinoids)

Obata, S. 1985. On the ionic basis of the fertilization potential in echinoid eggs. Nagoya Univ.

Yokota, E. 1985. Activation of 21S dynein ATPase by axonemes. Nagoya Univ. (echinoids)

Ohtsuki, H. 1967. The phototactic behaviour of the starfish, *Asterias amurensis*. Okayama Univ.

Ohtsu, K. 1971. The ocellar potential of the starfish, *Asterias amurensis* Luetken. Okayama Univ.

Tamotsu, S. 1982. Morphophysiological studies on regenerating processes of the compound ocelli in the starfish, *Asterias amurensis* Luetken. Okayama Univ.

Takasu, N. 1983. Freeze-fracture and histofluorescence studies of photoreceptive membranes in the primitive ocelli of some invertebrates. Okayama Univ. (includes asteroids).

Nogi, H. 1985. The inhibitory and facilitatory substances on the spawning activities in sea urchins. Okayama Univ.

Yoneda, T. 1965. Isolation of taurine and D-cycteinolic acid from a starfish, *Asterina pectinifera*. Univ. Hokkaido.

DOCTORAL DISSERTATIONS

Kawamura, K. 1973. Fishery biological studies on a sea urchin, Strongylocentrotus intermedius (A. Agassiz). Hokkaido Univ.

Miwa, K. 1975. Studies on frozen storage of sea urchin gonad. Hokkaido Univ.

Mochizuki, Y. 1978. Evolutionary aspects of glucose 6-phosphate dehydrogenase and hexokinase isozymes. Hokkaido Univ.

Taki, J. 1982. Studies on the age determination of the sea urchins. Hokkaido Univ.

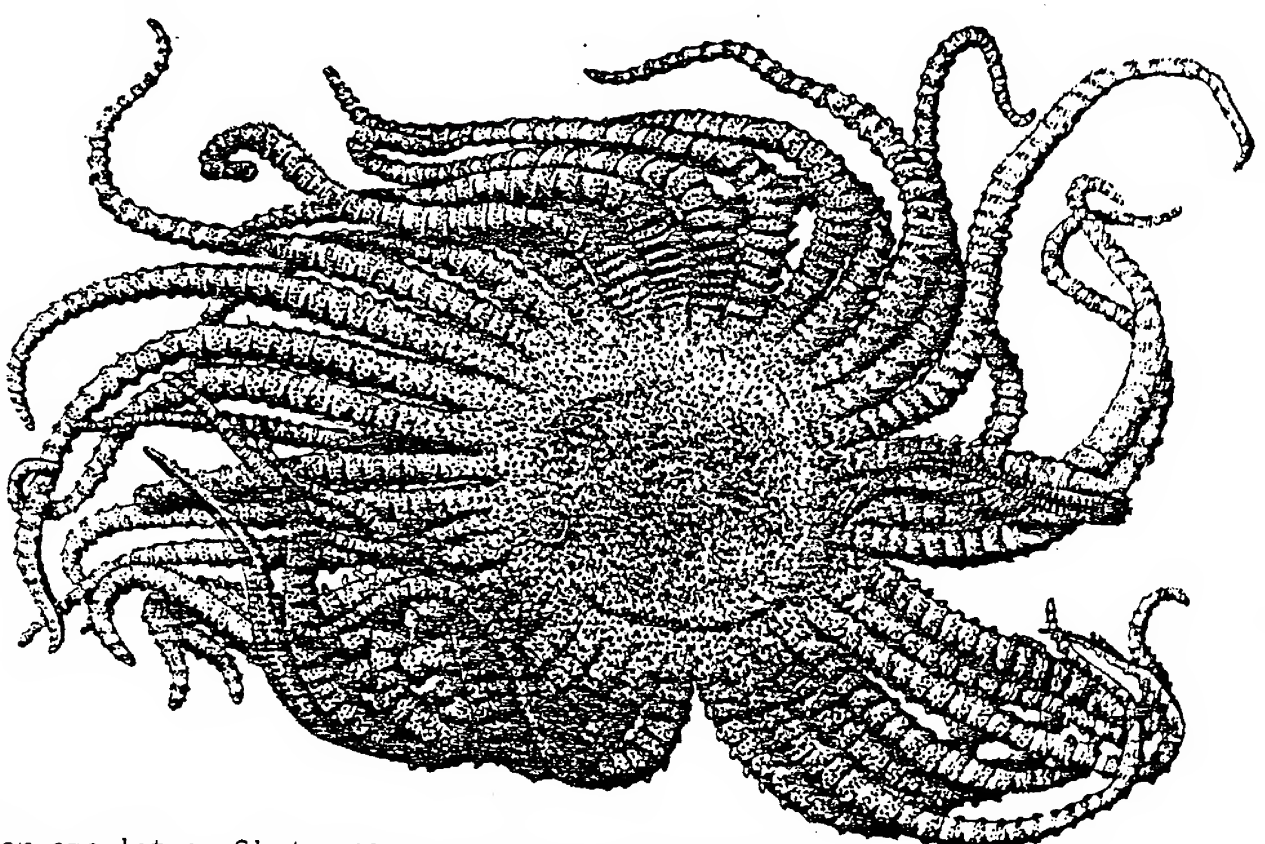
Matsuoka, N. 1983. Evolutionary studies of the glucose 6-phosphate dehydrogenase isozymes. Hokkaido Univ.

Yamada, Y. 1984. Studies on egg investment lytic enzymes from sea urchin sperm. Hokkaido Univ.

Yasuhara, T. 1984. Studies on aminopeptidase from sperm of the sea urchin, Strongylocentrotus intermedius. Hokkaido Univ.

Osanai, K. 1963. Relation between cortical change and ooplasmic activation in sea urchin eggs. Tohoku Univ.

Yamamoto, M. 1965. Studies on structure and function of mitotic apparatus during cell division (includes echinoides). Tohoku Univ.



Labidiaster annulatus. Sladen 1889. Challenger Expedition

Kominami, T. 1984. Embryogenesis in early starfish embryo. Kyoto Univ.

Yamamoto, K. 1985. Cytoplasmic cycle in meiotic division of starfish oocytes. Kyoto Univ.

Itakura, Y. 1983. Chemical studies on the saponins from the starfish, Acanthaster planci L., Astropecten latespinosus Meissner and Asterias amurensis versicolor Sladen. Kyushu Univ.

Nojima, S. 1984. Ecological studies of the sea star, Astropecten latespinosus Meissner. Kyushu Univ.

Kawamura, K. 1973. Fishery biological studies on a sea urchin, Strongylocentrotus intermedius (A. Agassiz). Hokkaido Central Fisheries Experimental Station.

Taki, J. 1982. Studies on age determination in sea urchins. Hokkaido Wakkanai Fisheries Experimental Station.

Fuji, A. 1967. Ecological studies on the growth and food consumption of Japanese common littoral sea urchin Strongylocentrotus intermedius (A. Agassiz). Hokkaido Univ.

Asano, M. 1972. On the formation of pigment in developmental processes of sea urchin embryos. Univ. Tokyo.

Higashi, A. 1973. Quantitative analysis on changes of physical aspects of membranes and protoplasm in fertilization of sea urchin eggs. Univ. Tokyo.

Hirai, E. 1972. Physiological significance of follicle cells in sea star reproduction. Univ. Tohoku.

Ii, I. 1977. Studies on glutathion reductase in sea urchin eggs. Univ. Tokyo.

Ikegami, S. 1968. Chemistry of physiological activators related to spawning of oocytes and spermatozoa and maturation division of eggs in starfish. Univ. Tokyo.

Kano, K. 1975. On rhythmic synthesis of specific proteins in early development of sea urchin embryos. Univ. Tokyo.

Kobayashi, N. 1966. Cytological studies on the effects of some mitotic poisons upon cleavage of the sea urchin egg. Univ. Kyoto.

Kogori, T. 1970. Studies on some properties of myosin B and on adenosine triphoshatase activity of myosin of sea-cucumber longitudinal muscle.

Kondo, K. 1973. Intercellular adhesion in sea urchin embryos. Univ. Tokyo.

Miyazaki, S. 1973. Action potentials and non-linear current voltage relations in starfish oocytes. Univ. Tokyo.

Nagano, H. 1968. Thymidine kinase, thymidylate kinase and 32Pi- and 14C-thymidine incorporation into DNA during early embryogenesis of the sea urchin. Univ. Tokyo.

Shioda, M. 1980. Studies on subcellular distribution of DNA polyemerase during sea urchin embryognesis. Univ. Tokyo.

Hirai, S. 1973. The role of ovarian follicle cells in starfish reproduction. Tohoku Univ.

Shôji, Y. 1980. Quantitative studies on polarization optical properties of living cells. Tokyo Inst. Tech. (includes echinoids)

Ishijima, S. 1983. Mechanical properties of the echinoderm sperm flagella. Tokyo Inst. Tech. (includes echinoids)

Sakai, H. 1960. Studies on sulfhydryl groups during cell division of sea urchin egg. Tokyo Metropolitan Univ.

Miki-Noumura, T. 1963. The ATPase activity of the mitotic apparatus of the sea urchin egg. Tokyo Metropolitan Univ.

Yoneda, M. 1964. Tension at the surface of sea-urchin egg. Tokyo Metropolitan Univ.

Ikeda, M. 1965. Behaviour of sulfhydryl groups of sea urchin eggs under the blockage of cell division. Tokyo Metropolitan Univ.

Ishizaka, S. 1966. Surface characters of dividing cells. Tokyo Metropolitan Univ.

Otake, H. 1974. Sperm activating substance obtained from jelly coat of sea urchin eggs. Tokyo Metropolitan Univ.

Ogawa, K. 1974. Studies on flagellar ATPase from sea urchin spermatozoa. Tokyo Metropolitan Univ.

Kanki, T. 1976. Studies on RNA synthesis in sea urchin embryos during early development and in isolated micromeres during differentiation. Tokyo Metropolitan Univ.

Oguri, K. 1978. Occurrence of oversulfated dermatan sulfate in developing sea urchin embryos. Tokyo Metropolitan Univ.

Saotome, K. 1978. Studies on polysaccharide-sulfating system in sea urchin embryos. Tokyo Metropolitan Univ.

Takeuchi, K. 1979. Biochemical studies on hatching enzyme of sea urchin, Strongylocentrotus intermedius. Tokyo Metropolitan Univ.

Takahashi, K. 1981. Studies on the regulation of synthesis and translation of the messenger RNA during the early development of sea urchin embryo. Tokyo Metropolitan Univ.

Inoue, H. 1983. Active calcium transport by the microsomal fraction isolated from sea urchin eggs. Tokyo Metropolitan Univ.

Kitajima, T. 1983. Studies on the specific protein synthesis of sea urchin micromeres during differentiation. Tokyo Metropolitan Univ.

Nemoto, S. 1983. Cyto-physiological studies on meiosis reinitiation of starfish oocytes. Tokyo Metropolitan Univ.

Ishihara, K. 1960. Release and activation of aldolase at fertilization in sea urchin eggs. Univ. of Tokyo.

Yasumasu, I. 1961. Studies on the hatching enzyme of sea urchins. Univ. of Tokyo.

Komata, Y. 1962. Studies on sea urchin extracts. Univ. of Tokyo.

Fuji, A. R. 1963. Basic studies on the control of fishery and multiplication of the resources of Hemicentrotus pulcherrimus. Univ. of Tokyo.

Isono, N. 1964. Pentose phosphate cycle in sea urchin eggs. Univ. of Tokyo.

Yasumoto, T. 1966. Studies on the starfish saponins. Univ. of Tokyo.

Ikegami, S. 1968. Chemistry on physiologically active substances which are involved in spawning and oocyte maturation of starfish. Hiroshima Univ.

Isono, Y. 1968. Complex lipids in gametes of echinoderms. Univ. of Tokyo.

Hoshi, M. 1970. Biochemistry of mucolipids of sea urchin gamates and embryos. Univ. of Tokyo.

Amemiya, S. 1971. Relationship between cilium formation and cell association. Univ. of Tokyo. (echinoids)

Nomaguchi, T. A. 1971. Effects of X-irradiation on the early development of sea-urchin embryos.

Asashima, M. 1972. Pigment formation in sea urchin embryos. Univ. of Tokyo.

Higashi, A. 1973. Changes in physical properties of the membrane and the cytoplasm of sea urchin eggs upon fertilization. Univ. of Tokyo.

Kondo, K. 1973. Cell adhesion in sea urchin embryo. Univ. of Tokyo.

Mabuchi, I. 1973. Molecular mechanism of cell division. Univ. of Tokyo. (includes asteroids and echinoids)

Morisawa, M. 1973. Heavy metals and spermatozoan motility. Univ. of Tokyo. (echinoids)

Tonegawa, Y. 1973. Isolation and characterization of a particulate aggregation factor from sea urchin embryos. Univ. of Tokyo.

Ogawa, K. 1974. Studies on dynein in sea urchin sperm flagella. Univ. of Tokyo.

Shirai, H. 1974. Mechanism of production of 1-methyladenine in starfish. Univ. of Tokyo.

Kamiya, Y. 1975. Structure and chemistry of spawning inhibitors in the starfish, Asterias amurensis. Univ. of Tokyo.

Kimura, H. 1975. X-ray-induced mitotic delay and its reduction in sea urchin eggs. Univ. of Tokyo.

Kubota, J. 1975. Effect of concanavalin A on 1-methyladenine production in starfish follicle cells. Univ. of Tokyo.

Kishimoto, T. 1976. Mechanism of maturation in starfish oocytes. Univ. of Tokyo.

Nonaka, M. 1977. Activation mechanism of thymidine kinase in unfertilized sea urchin eggs upon fertilization. Univ. of Tokyo.

Nozawa, A. 1977. Sulfate-activating system in developing sea urchin embryos. Univ. of Tokyo.

Okuno, M. 1977. Studies on the mechanism of flagellar movement. Univ. of Tokyo.

Sano, K. 1977. Changes in cell surface during differentiation of sea urchin embryos. Univ. of Tokyo.

Moriya, T. 1978. Arylsulfatase from sea urchin sperm. Univ. of Tokyo.

Nakamura, I. 1978. Change in radiosensitivity on the development of sea urchin eggs. Univ. of Tokyo.

Kobayashi, Y. 1979. Studies on tubulin in starfish sperm flagella. Univ. of Tokyo.

Hidaka, M. 1979. Studies on the mechanism of connective tissue catch in the sea urchin, Anthocidaris crassispina. Univ. of Tokyo.

Shigei, M. 1980. A study on the echinoid fauna of the East China Sea and the coastal waters of South Korea, Kyushu, Ryukyu, and Taiwan. Univ. of Tokyo.

Akasaka, K. 1981. Studies on the sulfated glycans and their biological roles in developing sea urchin embryos. Univ. of Tokyo.

Ejima, Y. 1981. Developmental abnormalities in sea urchin embryos induced by ultraviolet-irradiated sperm. Univ. of Tokyo.

Naruse, H. 1981. An inhibitory factor of microtubule assembly from egg cortices of echinoderms. Univ. of Tokyo.

Okano, K. 1981. Structures of ovarian asterosaponins in the starfish, Asterias amurensis. Univ. of Tokyo.

Hamaguchi, Y. 1982. Studies on the early development of echinoderms by means of microinjection. Univ. of Tokyo.

Maekawa, S. 1982. Regulatory protein factors of actin polymerization present in starfish sperm and eggs. Univ. of Tokyo.

Kamimura, S. 1983. Studies on the dynamics of microtubule sliding in sea urchin sperm flagella. Univ. of Tokyo.

Ishiguro, K. 1984. Biochemical studies on regulatory mechanism of sperm flagellar movement in echinoderms. Univ. of Tokyo.

Oishi, N. 1984. A study on enzymes involved in DNA synthesis in echinodermal eggs. Univ. of Tokyo.

Toyoshima-Yano, Y. 1984. Subunit structure of dynein. Univ. of Tokyo.

Hosoya, H. 1985. Regulatory proteins of actin polymerization in echinoderm eggs. Univ. of Tokyo.

Iwasa, F. 1985. Studies on functions of calmodulin in echinoderm egg and sperm. Univ. of Tokyo.

Motokawa, T. 1985. Studies on echinoderm connective tissues with adjustable mechanical properties. Univ. of Tokyo.

Aketa, K. 1961. Studies on the production of the fertilization acid in sea urchin eggs. Nagoya Univ.

Ishikawa, M. 1961. The relation between the incorporation of phosphorus and the induction of cleavage by hypertonic treatment in the sea urchin egg. Nagoya Univ.

Kojima, M. 1961. Cyclic changes of the cortex and the cytoplasm of the fertilized and the activated sea urchin egg. Nagoya Univ.

Okazaki, K. 1961. Skeleton formation of sea urchin larvae. Nagoya Univ.

Uehara, T. 1971. Experimental studies on the propagation of the fertilization-wave in the sea urchin egg. Nagoya Univ.

Iwaikawa, Y. 1972. Studies on the regeneration of cilia in the sea urchin embryo. Nagoya Univ.

Onitake, K. 1972. Immunological analysis of fertilization in the sea urchin egg. Nagoya Univ.

Yasumoto, T. 1966. Studies on saponin of sea stars. Univ. Tokyo.

Tsukahara, J. 1972. Electron microscopic studies on the behavior of yolk substances during oogenesis in the sea urchin. Nagoya Univ.

Uto, N. 1976. Studies on the relationship between insufficient-stimuli and changes of nucleus in the sea urchin egg. Nagoya Univ.

Yokota, Y. 1979. Developmental and enzymological studies on acid phosphatase of sea urchin eggs. Nagoya Univ.

Nakashima, S. 1980. Study on cleavage induction of fertilized and artificially activated sea urchin eggs. Nagoya Univ.

Tanaka, Y. 1981. The mechanism of micromere formation in the developing sea urchin embryos. Nagoya Univ.

Yoshida, M. 1982. Sperm-binding factor in sea urchin eggs. Nagoya Univ.

Kato, K. 1983. Significance of the acrosome reaction in fertilization of sea urchins. Nagoya Univ.

Sasaki, H. 1983. Cortical reaction and calcium in sea urchin eggs. Nagoya Univ.

Iwata, M. 1984. Extracellular matrix during the development of sea urchin embryos. Nagoya Univ.

Hirano, K. 1984. Aster inducing activity of sperm centrioles. Nagoya Univ.
Masuda, M. 1984. Cyto-embryological study of sea urchin ciliogenesis. Nagoya Univ.

Okabayashi, K. Energy metabolism in sea urchin eggs. Nagoya Univ.

Takahashi, T. C. 1984. A cell biological approach to the action process involved in the effect of heavy water (D_2O) on the metaphase mitotic spindle. Nagoya Univ. (echinoids)

Takeshima, K. 1984. Studies on ribosomal proteins in sea urchin eggs. Nagoya Univ.

Kobayashi, N. 1967. Cytological studies on the effects of some mitotic poisons upon cleavage of the sea urchin egg. Kyoto Univ.

Hirama, M. 1974. Ribosomes in sea urchin embryo. Kyoto Univ.

Maruyama, Y. 1981. Development of swimming behavior of sea urchin embryos. Kyoto Univ.

Doi, H. 1983. Mathematical analysis of the cleavage patterns of sea urchin and ascidian. Kyoto Univ.

Oshima, N. 1983. studies on the surface charge and the mechanical structure of sea urchin eggs by means of cell electrophoresis. Kyoto Univ.

Tanaka, A. 1976. Contributions to the biology of littoral sea urchins. I. Measurements of clinging power and observations on stability of sea urchin colonies. Univ. Kyoto.

ECHINODERM LITERATURE

Abreu Perez M. New Ophiuroidea (Echinodermata) of the Gulf of Batabano Cuba. Poeyana Inst Zool Acad Cienc Cuba. (259). 1983. 1-6.

Adams J A Effect of polychlorinated biphenyls aroclor 1254 on early development and mortality in Arbacia eggs. Water Air Soil Pollut 20. 1983. 1-6.

Afiyatullov Sh Sh; Stonik V A; Kalinovskii A I; Elyakov G B Glycosides of marine invertebrates 16. Cucumariogenin from glycosides of the sea-cucumber Cucumaria fraudatrix. Khim Prir Soedin (Tashk) (1). 1983. 59-64.

Afiyatullov Sh Sh; Stonik V A; Kalinovskii A I; Elyakov G B Glycosides of marine invertebrates 16. Cucumariogenin from glycosides of the holothurian Cucumaria fraudatrix. Chem Nat Compd 19. 1983. 55-59.

Ahmed M; Rizvi S H N; Moazzam M The distribution and abundance of intertidal organisms on some beaches of Mekran coast in Pakistan northern Arabian Sea. Pak J Zool 14. 1982. 175-184. (Crinoidea)

Akasaka K; Terayama H A proteoglycan fraction isolated from the EDTA extract of sea-urchin Hemicentrotus pulcherrimus gastrulae stimulates reaggregation of dissociated embryonic cells. Exp Cell Res 150. 1984. 226-233.

Akasaka K; Terayama H. Sulfated fucogalactan protein conjugate present in the EDTA extract from Anthocidaris embryos mid gastrula. J Fac Sci Univ Tokyo Sect IV Zool 15. 1982. 181-190.

Akasaka K; Terayama H. Sulfated glycan present in the EDTA extract of Hemicentrotus pulcherrimus embryos mid gastrula. Exp Cell Res 146. 1983. 177-186.

Akhemet'eva E A; Smirnov B A; Bordovskii O K. On some characteristic features of organic matter composition in the intestine contents of the bottom detritus feeders holothurians. Okeanologiya 22. 1982. 1021-1024.

Akimoto Y; Shiroya T; Egami N. Abnormal morphogenesis of sea-urchin Hemicentrotus pulcherrimus embryo induced by UV partial irradiation given at cleavage stage. J Radiat Res 24. 1983. 197-202.

Alam M S; Hafizuddin A K M. Echinoderm fauna of Bangladesh 2. Astropectinids from the southeastern coast of Bangladesh. Bangladesh J Zool 10. 1982. 55-61.

Albano R M; Mourao P A S. Presence of sulfated glycans in ascidian tunic and in the body wall of a sea-cucumber. Biochim Biophys Acta 760. 1983. 192-196.

Allen P L Feeding behavior of Asterias-rubens on soft bottom bivalves a study in selective predation. J Exp Mar Biol Ecol 70. 1983. 79-90.

Amemiya S. Mechanisms of gastrulation in sea-urchin embryos. J Fac Sci Univ Tokyo Sect IV Zool 15. 1982. 107-118.

Amy R L Gamete sizes and developmental time tables of five tropical sea-urchins. Bull Mar Sci 33. 1983. 173-176.

Anderson R J; Velimrov B An experimental investigation of the palatability of kelp bed algae to the sea-urchin Parechinus angulosus Mar Ecol (Pubbl Stn Zool Napoli I) 3. 1982. 357-374.

Andreeva L F; Andreeva T F DNA synthesis in early embryogenesis of sea-urchins 3. Patterns of activation of the sites of replication initiation. Ontogenez 14. 1983. 36-44.

Andreeva T F; Andreeva L F Tritium labeled thymidine incorporation into the repetitive and unique nucleotide sequences in DNA of the sea-urchin Strongylocentrotus-droebachiensis at the stage of synchronous cleavage divisions/e. Biokhimiya 47. 1982. 1147-1153.

Andreeva T F; Andreeva L F. Incorporation of tritium labeled thymidine into repetitive and unique sequences of DNA of the sea-urchin Strongylocentrotus-droebachiensis at the stage of synchronous divisions of cleavage/o. Biochemistry 47. 1982. 959-964.

Angerer L M; Deleon D V; Angerer R C; Showman R M; Wells D E; Raff R A Delayed accumulation of maternal histone messenger RNA during sea-urchin Strongylocentrotus-purpuratus oogenesis Dev Biol 101. 1984. 477-484.

Anisimov A P The study of proliferative processes in the alimentary canal epithelium of sea-urchins. Biol Morya (5). 1982. 49-55.

Anisimov A P Morphological and cytochemical characteristics of the alimentary tract epithelia and heart of sea-urchin Echinocardium cordatum. Biol Morya (2). 1982. 39-46.

Anisimov A P Characteristics of proliferative processes in the epithelia of the alimentary tract of sea-urchins. Sov J Mar Biol 8. 1982. 274-280.

Annett C; Pierotti R. Foraging behavior and prey selection of the leather sea-star Dermasterias-imbricata. Mar Ecol Prog Ser 14. 1983. 197-206.

Anon Experimental study on the effect against gastric ulcer of rat by Asterias rollestoni Bell. J Mar Drugs China. 1. 1982. 18-20.

Antonelli P L; Kazarinoff N D Starfish Acanthaster planci predation of a growing coral reef community. J Theor Biol 107. 1984. 667-684.

Anstrom J A; Summers R G. A morphological analysis of the 1st cleavage mitotic cytoskeleton isolated from sea-urchin embryos Strongylocentrotus-droebachiensis. J Morphol 177. 1983. 329-344.

Anstrom J A; Summers R G. A unilateral cleavage furrow in embryos of Strongylocentrotus-droebachiensis. J Exp Zool 227. 1983. 395-404.

Applegate A L. Echinoderms of Southern Taiwan. Bull Inst Zool Acad Sin (Taipei) 23. 1984. 93-118.

Arendt Yu A. Systematics of Echinodermata 2. Zool Zh 62. 1983. 1445-1456.

Asai D J; Brokaw C J; Thompson W C; Wilson L. 2 Different monoclonal antibodies to alpha tubulin inhibit the bending of reactivated sea-urchin spermatozoa. Cell Motil 2. 1982. 599-614.

Ausich W I. Component concept for the study of paleocommunities with an example from the Early Carboniferous of Southern Indiana USA Palaeogeogr Palaeoclimatol Palaeoecol 44. 1983. 251-282. (Crinoidea)

Avrova N F; Karpova O B; Nalivaeva N N. The content and composition of gangliosides from the nervous tissue of the sea-urchin Strongylocentrotus intermedius. Zh Evol Biokhim Fiziol 19. 1983. 127-132.

Ayling A L. Factors affecting the spatial distributions of thinly encrusting sponges from temperate waters. Oecologia 60. 1983. 412-418 (Echinoidea).

Aziz, Z. 1984. Les astéries (Echinodermes) du Plateau de la Sonde (Indonesia). Indo-Malayan Zool. 1, 127-140.

Aziz, A, & M. Jangoux. 1984. Description de quatre nouvelles éspeces d'astérides profonds (Echinodermata) de la région Indo-Malaise. Indo-Malayan Zool. 2, 187-194.

Aziz, A., & M. Jangoux. 1984. Note on the stature of the goneasterid genera Aphroditaster Sladen, 1889, and Fisheraster Halpern, 1970. (Echinodermata, Asteroidea). Indo-Malayan Zool. 2, 255-258.

Azorin F; Olivares C; Jordan A; Perez-Grau L; Cornudella L; Subirana J A. Heterogeneity of the histone containing chromatin in sea-cucumber Holothuria-tubulosa spermatozoa distribution of the basic protein phi-O and absence of nonhistone proteins. Exp Cell Res 148. 1983. 331-344.

Azzolina, J. F. 1983. Evolution de la maladie de l'oursin comestible Paracentrotus lividus (Lmk.) dans la baie de Port-Cros (Var. France). Rapp. Comm. int. Mer Medit. 28, 263.

Azzolina, J. F., C. F. Boudouresque, H. Nedelec. 1983. Seasonal and year to year changes of the edible sea urchin Paracentrotus lividus populations in the Bay of Port-Cros (Var, France). Rapp. Comm. int. Mer Medit. 28, 265.

Badve R M; Aziz S A Revision of cassiduloid genus Gongrochanus (Echinodermata Echinoidea) from South Indian Cretaceous deposits. Proc Indian Acad Sci Anim Sci 92. 1983. 231-246.

Baginski R M; McBlaine P J; Carroll E J Jr. Novel procedures for collection of sea-urchin Strongylocentrotus purpuratus egg cortical granule exudate partial characterization and evidence for post secretion processing. Gamete Res 6. 1982. 39-52.

Bak R P M; Carpay M J E; De Ruyter Van Steveninck E D. Densities of the sea-urchin Diadema antillarum before and after mass mortalities on the coral reefs of Curacao Netherlands Antilles. Mar Ecol Prog Ser 17. 1984. 105-108.

Baker A N. A new apatopygid echinoid genus from New-Zealand (Echinodermata Cassiduloida). Natl Mus N Z Rec 2 (15). 1983. 163-173.

Baker E J; Infante A A. Individual regulation of the accumulation of histone H-1 messenger RNA and core histone messenger RNA in sea-urchin Strongylocentrotus purpuratus embryos. Mol Cell Biol 3. 1983. 974-981.

Balczon R; Schatten G. Microtubule containing detergent extracted cytoskeletons in sea-urchin eggs from fertilization through cell division antitubulin immunofluorescence microscopy. Cell Motil 3. 1983. 213-226.

Bamber R N. The benthos of a marine fly ash dumping ground. J Mar Biol Assoc U K 64. 1984. 211-226. (Echinoidea).

Ballinger D G; Bray S J; Hunt T. Studies of the kinetics and ionic requirements for the phosphorylation of ribosomal protein S-6 after fertilization of Arbacia punctulata eggs. Dev Biol 101. 1984. 192-200.

Barber M L; Kolan D M; Yabuta C; Nielsen B. Mechanisms of glucose 6 phosphate dehydrogenase EC-1.1.1.49 isozyme pattern changes at fertilization. J Exp Zool 219. 1982. 369-376. (Echinoidea).

Barker M F; Nichols D. Reproduction recruitment and juvenile ecology of the starfish Asterias rubens and Marthasterias glacialis. J Mar Biol Assoc U K 63. 1983. 745-766.

Bartsch I. Ophiambix meteoris new-species a new brittle-star from the Iberian Deep Sea Basin (Ophiacanthidae Ophiuroidae). Spixiana (Muench) 6. 1983. 97-100.

Bartsch I. Ophiuroidea (Echinodermata) from the northeastern Atlantic deep sea. Meteor forschungsergeb Reihe D - Biol (36). 1983. 13-20.

Bartsch I. Ophiuroidea (Echinodermata) from the Patagonian shelf South America. Mitt Hamb Zool Must Inst. 79. 1982. 211-250.

Batrakov S G; Muratov V B; Sakandelidze O G; Sulima A V; Rozynov B V. Cerebrosides of the far-eastern sea-cucumber Cucumaria japonica. Bioorg Khim 9. 1983. 539-552.

Bay S M; Oshida P S; Jenkins K D. A simple new bioassay based on echinochrome synthesis by larval sea-urchins Strongylocentrotus purpuratus. Mar Environ Res 8. 1983. 29-40.

Bedard P-A; Brandhorst B P. Patterns of protein synthesis and metabolism during sea-urchin Strongylocentrotus purpuratus embryogenesis. Dev Biol 96. 1983. 74-83.

Bao C; Chen G; Li J Effects of acidic mucopolysaccharide from Apostichopus japonicus (Selenka) on patelet aggregation of human and three other species of mammals. J. Mar. Drugs China. 11. 1984. 7-9.

Bedford A P; Moore P G Macrofaunal involvement in the sublittoral decay of kelp debris the detritivore community and species interactions. Estuarine Coastal Shelf Sci 18. 1984. 97-112. (Echinoidea).

Begg D A; Salmon E D; Hyatt H A The changes in structural organization of actin in the sea-urchin Arbacia punctulata egg cortex in response to hydrostatic pressure. J Cell Biol 97. 1983. 1795-1805.

Beijnink, F.B., I Van Der Sluis, P.A. Voogt. 1984. Turnover rates of fatty acid and amino acid in the coelomic fluid of the sea star Asterias rubens: implications for the route of nutrient translocation during vitellogenesis. Comp. Biochem. Physiol. 78B, 761-767.

Beijnink, F.B., J.J.S. Broertjes, F. Brands, and P.A. Voogt. 1984. Immunocytochemical demonstration of vitellogenic substances in the Immunocytological haemal system of the sea star, Asterias rubens. Mar. Biol. Lett. 5, 303-313.

Bell J L; Stancyk S E Population dynamics and reproduction of Dissodactylus mellitae Brachyura Pinnotheridae on its sand-dollar host Mellita quinquiesperforata (Echinodermata). Mar Ecol Prog Ser 13. 1983. 141-150.

Belyaev G M The systematic position of the multirayed sea-star from the sublittoral zone of the Moneron Island. Biol Morya (6). 1982. 29-33.

Benson S; Jones E M E; Crise-Benson N; Wilt F Morphology of the organic matrix of the spicule of the sea-urchin Strongylocentrotus purpuratus larva. Exp Cell Res 148. 1983. 249-253.

Berisha A; Buznikov G A; Mal'Chenko L A; Rakich L The effect of salts of heavy metals on the development of sea-urchin embryos and the protein synthesis in the mouse transplantable tumor cells. Ontogenez 14. 1983. 173-179.

Bernhard K; Englert G; Meister W; Vecchi M; Renstrom B; Liaaen-Jensen S Carotenoids of the carotenoprotein asteriarubin optical purity of asterinic acid. Helv Chim Acta 65. 1982. 2224-2229. (Asteroidea).

Bernstein, B.B., and R.W. Welsford. 1982. An assessment of feasibility of using high-calcium quicklime as an experimental tool for research into kelp bed/sea urchin ecosystems in Nova Scotia. Canadian Tech. Rept. Fisheries and Aquatic Sciences No. 968. 51 pp.

Bernstein B B; Schroeter S C; Mann K H Sea-urchin Strongylocentrotus droebachiensis aggregating behavior investigated by a subtidal multifactorial experiment. Can J Fish Aquat Sci 40. 1983. 1975-1986.

Bertheussen K Complement-like activity in sea-urchin Strongylocentrotus droebachiensis coelomic fluid. Dev Comp Immunol 7. 1983. 21-32.

Bibring T; Baxandall J; Harter C C Sodium dependent pH regulation in active sea-urchin sperm. Dev Biol 101. 1984. 425-435.

Birchmeier C; Folk W; Birnsteil M L The terminal RNA stem loop structure and 80 base pairs of spacer DNA are required for the formation of 3' termini of sea-urchin H-2A messenger RNA. Cell 35. 1983. 433-440.

Birchmeier C; Schuemperli D; Sconzo G; Birnstiel M L 3' editing of messenger RNA sequence requirements and involvement oa a 60 nucleotide RNA in maturation of histone messenger RNA precursors. Proc Natl Acad Sci U S A 81. 1984. 1057-1061.

Biseswar R A key to the species of Anelassorhynchus Echiura with a description of a new species from the east coast of southern Africa S Afr J Zool 19. 1984. 16-21.

Bisol P M; Costa R; Sibuet M Ecological and genetical survey on two deep sea holothurians Benthogone rosea and Benthodytes typica Mar Ecol Prog Ser 15. 1984. 275-282.

Bitter R; Penchaszadeh P E Trophic ecology of two coexisting sea-stars of the genus Astropecten in the Golfo Triste Venezuela Stud Neotrop Fauna Environ 18. 1983. 163-180.

Black R; Codd C; Hebbert D; Vink S; Burt J The functional significance of the relative size of Aristotles lantern in the sea-urchin Echinometra mathaei J Exp Mar Biol Ecol 77. 1984. 81-98.

Blake D B Some biological controls on the distribution of shallow water sea-stars (Asteroidea Echinodermata) Bull Mar Sci 33. 1983. 703-712.

Blake, D.B. 1984. Constructional morphology and life habits of the Jurassic sea star Sphaeraster quenstedt. N. Jb. Geol. Palaont. Abh. 169, 74-101.

Blankenship J; Benson S Collagen metabolism and spicule formation in sea-urchin Strongylocentrotus purpuratus micromeres Exp Cell Res 152. 1984. 98-104.

Blankley, W.O. 1984. Ecology of the starfish Anasterias rupicola at Marion Island (Southern Ocean). Mar. Ecol. Prog. Ser. 18, 131-137.

Bolanowski M A; Earles B J; Lennarz W J Fatty acylation of proteins during development of sea-urchin Strongylocentrotus purpuratus embryos. J Biol Chem 259. 1984. 4934-4940.

Bowmer T; Keegan B F Field survey of the occurrence and significance of regeneration in Amphiura-filiformis (Echinodermata Ophiuroidea) from Galway Bay western coast of Ireland. Mar Biol 74. 1983. 65-72.

Bouillon, J., & M. Jangoux. 1984. Note sur l'association entre le mollusque parasite Thyca crystallina (Gould) (Gastropoda, Prosobranchia) et l'astérie Linckia laevigata (L.) (Echinodermata) sur le récif de l'île de Laing (Papouasie Nouvelle Guinée). Annls Soc r zool Belg. 114-249-256.

Bozhkova V P; Nikolaev P P; Petryaevskaya V B; Chailakhyan L M Ontogenez 14. 1983. 247-254.

Bozhkova V P; Nikolaev P P; Petryaevskaya V B; Chailakhyan L M Participation of cytoskeletal structures in the formation of microsomes in sea-urchins Scaphechinus mirabilis Sov J Dev Biol 14. 1983. 156-161.

Bozhkova V P; Nikolaev P P; Petryaevskaya V B; Shmukler Yu B Intercellular interactions in early sea-urchin embryos 4. Orientation of blastomere cleavage planes as a factor of micromere formation. Sov J Dev Biol 13. 1982. 361-367.

Bozhkova V P; Nikolaev P P; Petryaevskaya V B; Shmukler Yu B Cellular interactions in the early embryos of sea-urchins Scaphechinus mirabilis 4. Orientation of the surfaces of blastomere division as a factor of micromere formation. Ontogenez 13. 1982. 596-604.

Branno M; De Franciscis V; Tosi L In-vitro methylation of histones in sea-urchin nuclei during early embryogenesis Biochim Biophys Acta 741. 1983. 136-142.

Breitburg, D. 1985. Development of a subtidal epibenthic community: factor affecting species composition and the mechanics of succession. Oecologia. 65, 1073-1084. (Echinoids and Asteroids).

Brett C E; Frest T J; Sprinkle J; Clement C R Coronoidea a new class of blastozoan echinoderms based on taxonomic reevaluation of Stephanocrinus J Paleontol 57. 1983. 627-651.

Briggs, K.B. 1985. Deposit feeding by some deep-sea megabenthos from the Venezuela Basin: selective or non-selective. Mar. Ecol. Prog. Ser. 21, 127-134. (Asteroids).

Brillouet C; Leclerc M; Binaghi R A; Luquet G Specific immune response in the sea-star Asterias rubens production of antibody-like factors Cell Immunol 84. 1984. 138-144.

Broertjes J J S; De Waard P; Voogt P A On the presence of vitellogenic substances in the starfish Asterias rubens J Mar Biol Assoc U K 64. 1984. 261-270.

Broertjes J J S; De Waard P; Voogt P A Interference of azide in the estimation of total lipids by the sulfophospho vanillin method Experientia 39. 1983. 594-595. (Asteroidea).

Bruce A J A further note on Pycnocaris chagoae (Decapoda Gnathophyllidae) Crustaceana 45. 1983. 107-108. (Holothuroidea).

Bruce A J Rumphius II expedition 1975 parasite commensal Crustacea 9. Crustacea Decapoda 1. Natantia Pontoniinae. Bull Mus Natl Hist Nat Sect A Zool Biol Ecol Anim 5 (3). 1983. 871-902. (Crinoidea).

Bryan J; Kane R E Actin gelation in sea-urchin Tripneustes gratilla egg extracts Wilson, L. (Ed.). Methods In Cell Biology, vol. 25. Academic Press, N.Y., 1982. 175-200.

Bryan P N; Olah J; Birnstiel M L Major changes in the 5' and 3' chromatin structure of sea-urchin histone genes accompany their activation and inactivation in development. Cell. 1983. 843-848.

Buckland-Nicks J; Walker C W; Chia F-S Ultrastructure of the male reproductive system and of spermatogenesis in the viviparous brittle-star Amphipholis squamata J Morphol 179. 1984. 243-262.

Budin I N A new species of sand-dollar of the genus Scaphechinus from Peter-The-Great Bay in the Sea of Japan. Biol Morya (5). 1983. 55-56.

Burke R D Neural control of metamorphosis in Dendraster excentricus Biol Bull 164. 1983. 176-188.

Burke R D The structure of the larval nervous system of Pisaster-ochraceus (Echinodermata Asteroidea). J Morphol 178. 1983. 23-36.

Burkhardt A; Hansmann W; Maerkel K; Niemann H-J Mechanical design in spines of diadematoid echinoids (Echinodermata Echinoidea) Zoomorphology 102. 1983. 189-204.

Burnell D J; Apsimon J W Echinoderm saponins Scheuer, P. J. (Ed.). Marine natural products: Vol 5. 1983. 287-390.

Bushman F D; Crain W R Jr Conserved pattern of embryonic actin gene expression in several sea-urchins and a sand-dollar Dev Biol 98. 1983. 429-436.

Buxton C D; Field J G Feeding defecation and absorption efficiency in the sea-urchin Parechinus angulosus S Afr J Zool 18. 1983. 11-14.

Buznikov G A; Mal'chenko L A; Vu Dung Tien; Gordeev E N; Kudryashova N I; Ovsepyan T R; Suvorov N N; Khromov-borisov N V Neurochemical sensitivity of oocytes and early embryos in starfishes. Zh Evol Biokhim Fiziol 19. 1983. 539-544.

Buznikov G A; Mal'chenko L A; Turpaev T M; Vu Zung Tien Embryos of echinoderms from the Vietnamese coastal waters as an object for testing cytotoxic neuropharmacological drugs Biol Morya (6). 1982. 24-29.

Byrne M; Fontaine A R Morphology and function of the tube feet of Florometra serratissima (Echinodermata Crinoidea). Zoomorphology 102. 1983. 175-188.

Cabrera C V; Lee J J; Ellison J W; Britten R J; Davidson E H Regulation of cytoplasmic messenger RNA prevalence in sea-urchin Strongylocentrotus purpuratus embryos rates of appearance and turnover for specific sequences. J Mol Biol 174. 1984. 85-112.

Cabrera C V; Jacobs H T; Posakony J W; Grula J W; Roberts J W; Britten R J; Davidson E H Transcripts of three mitochondrial genes in the RNA of sea-urchin eggs and embryos. Dev Biol 97. 1983. 500-505.

Campbell, D. B. 1984. Foraging movements of the sea star Asterias forbesi (Desor) (Echinodermata: Asteroidea) in Narragansett Bay, Rhode Island U.S.A. Mar. Behav. Physiol. 11, 185-198.

Campbell D B; Turner R L Echinaster graminicola new-species of spinulosid sea-star Echinodermata Asteroidea from the west coast of Florida USA Proc Biol Soc Wash 97. 1984. 167-178.

Canicatti C; Parrinello N Chromatographic separation of coelomic fluid from Holothuria polii echinodermata and partial characterization of the fractions reacting with erythrocytes Experientia: 39. 1983. 764-766.

Cantino M E; Schackmann R W; Johnson D E Changes in subcellular elemental distributions accompanying the acrosome reaction in sea-urchin sperm J Exp Zool 226. 1983. 255-268.

Cao S et al the activity of saponins from Asterias rollestoni against experimental gastric ulcer in rats. J. Mar. Drugs China. 4. 1982. 21-22.

Carpenter C D; Bruskin A M; Hardin P E; Keast M J; Anstrom J; Tyner A L; Brandhorst B P; Klein W H Novel proteins belonging to the troponin C superfamily are encoded by a set of messenger RNA in sea-urchin Strongylocentrotus purpuratus embryos. Cell 36. 1984. 663-672.

Carron C P; Longo F J Filipin sterol complexes in fertilized and unfertilized sea-urchin Arbacia punctulata egg membranes Dev Biol 99. 1983. 482-488.

Caso, M E Los equinoideos del Pacifico de Mexico. Parte Quarta. Ordenes Cassiduloida y Spatangoida. Centro Cienc del Mar y Limnol Univ Nal Auton Mexico Publ Exp 6, 1-200. 1983.

Caso, M.E. Especies del género Amphichondrius de la costa del Pacifico americano. Descripción de una nueva especie del género Amphichondrius. Amphichondrius unamexici sp nov. An Centro Cienc del Mar y Limnol Univ Nal Auton Mexico. 20, 209-230. 1983.

Caso, M.E. 1984. Descripción de un género nuevo y una especie nueva de holoturoideo - Parathyonacta gen. nov. y Parathyonacta bonifaznunoi sp. nov. - colectade en la campaña oceanográfica Sipco III a bordo del buque oceanográfica "El Puma". An Inst Cienc del May y Limnol Univ Nat Auton Mexico. 1, 181-210.

Chambers S A M; Vaughn J P; Shaw B R Shortest nucleosomal repeat lengths during sea-urchin Strongylocentrotus purpuratus development are found in two cell embryos Biochemistry 22. 1983. 5626-5631.

Chen K et al The preliminary studies on the pharmacological actions of Holothuria leucospilota toxin 1. J. Mar. Drugs China. 12. 1984. 15-19.

Chauvel J; Melendez B Revision of some echinoderms Cystoidea Crinoidea of the Upper Ordovician of the Pyrenees Spain. Acta Geol Hisp 16. 1981. 125-128.

Cherkasov E N; Levin V S Analysis of size weight relations in starfishes Biol Morya (6). 1983. 65-68.

Christen R; Schackmann R W; Shapiro B M Interactions between sperm and sea-urchin Strongylocentrotus purpuratus egg jelly Dev Biol 98. 1983. 1-14.

Christen R Acidic vesicles and the uptake of amines by sea-urchin eggs Exp Cell Res 143. 1983. 319-326.

Christen R; Schackmann R W; Dahlquist F W; Shapiro B M Phosphorus-31 NMR analysis of sea-urchin Strongylocentrotus purpuratus sperm activation reversible formation of high energy phosphate compounds by changes in intracellular PH Exp Cell Res 149. 1983. 289-294.

Christen R; Schackmann R W; Shapiro B M Metabolism of sea-urchin Strongylocentrotus purpuratus sperm interrelationships between intracellular pH ATPase activity and mitochondrial respiration. J Biol Chem 258. 1983. 5392-5399.

Claerebout, M., & M. Jangoux 1985. Conditions de digestion et activité de quelques polysaccharidases dans le tube digestif de l'oursin Paracentrotus lividus (Echinodermata). Biochem. Syst. Ecol. 13, 51-54.

Cloud J G Pressure inhibition of starfish Pisaster ochraceus oocyte maturation temporal aspects J Exp Zool 230. 1984. 17-22.

Cloud J G Hydrostatic pressure inhibition of hormone induced resumption of meiotic maturation in isolated oocytes J Exp Zool 227. 1983. 265-270. (Asteroidea)

Coates, M.H.F.; Champan, D.W.; Connell. 1984. Effects of grazing by deposit-feeders on biogenic hydrocarbons in coral-reef surface sediments. Mar. Biol. 81, 87-96.

Coffe G; Foucault G; Raymond M N; Pudles J Tubulin dynamics during the cytoplasmic cohesiveness cycle in artificially activated sea-urchin Paracentrotus lividus eggs Exp Cell Res 149. 1983. 409-418.

Coffe G; Foucault G; Soyer M O; De Billy F; Pudles J State of actin during the cycle of cohesiveness of the cytoplasm in partheno-genetically activated sea-urchin Paracentrotus lividus egg Exp Cell Res 142. 1982. 365-372.

Congiu A M; Dalendi E; Ugazio G Effects of metal ions and carbon tetrachloride on sea-urchin embryo Paracentrotus lividus Res Commun Chem Pathol Pharmacol 43. 1984. 317-324.

Coombe, D.R., P.L. Ely, C.R. Jenkins. 1984. Self non-self recognition in invertebrates. Quart. Rev. Biol. 59, 231-255 (includes echinoderms).

Cosson M P; Tang W-J Y; Gibbons I R Modification of flagellar waveform and ATPase activity in reactivated sea-urchin sperm treated with n ethyl maleimide J Cell Sci 60. 1983. 231-250.

Costelloe, J., B.F. Keegan. 1984. Feeding and related morphological structures in the dendrochirote Aslia lefevrei (Holothuroidea: Ecninodermata). Mar. Biol. 84, 135-142.

Costelloe, J., B.F. Keegan. 1984. Littoral and benthic investigations on the west coast of Ireland. XIX. Synonomy, diagnostic morphology, distribution and life-style of Aslia lefevrei (Barrois 1882) (Holothuroidea: Echinodermata). Proc. R. Irish Acad. Sec. B. 84, 29-34.

Cox K H; Deleon D V; Angerer L M; Angerer R C Detection of messenger RNA in sea-urchin Strongylocentrotus purpuratus embryos by in-situ hybridization using asymmetric RNA probes. Dev Biol 101. 1984. 485-502.

Cowden C; Young C M; Chia F S. Differential predation on marine invertebrate larvae by two benthic predators. Mar Ecol Prog Ser 14. 1983. 145-150. (Asteroidea, Echinoidea).

Cowen R K The effect of sheephead Semicossyphus pulcher predation on red sea-urchin Strongylocentrotus franciscanus populations an experimental analysis. Oecologia 58. 1983. 249-255.

Crain W R Jr; Bushman F D Transcripts of paternal and maternal actin gene alleles are present in interspecific sea-urchin embryo hybrids Dev Biol 100. 1983. 190-196.

Crawford B; Abed M The role of the basal lamina in mouth formation in the embryo of the starfish Pisaster ochraceus J Morphol 176. 1983. 235-246.

Criales M M Shrimps associated with coelenterates echinoderms and mollusks in the Santa Marta Region Colombia J Crustacean Biol 4. 1984. 307-317.

Csaba D The first Ophiuroidea from the Hungarian Lower Triassic Foldt Kozl 113. 1983. 357-364.

Dafni J Aboral depressions in tests of the sea-urchin Tripneustes gratilla in the Gulf of Eilat Red Sea J Exp Mar Biol Ecol 67. 1983. 1-16.

Dan K; Endo S; Uemura I Unequal cleavage in sea-urchins 2. Surface differentiation and the direction of nuclear migration Dev Growth Differ 25. 1983. 227-238.

Cranmer, G J. Recent investigations into the distribution of regular echinoids in the North Sea. J. Mar Biol Ass U K. 65. 1985. 351-358.

Dasgupta J D; Garbers D L Tyrosine protein kinase activity during embryogenesis J Biol Chem 258. 1983. 6174-6178.

Dautov S Sh; Karpenko A A Behavior and mechanisms of locomotion in two pectinid species of the Sea of Japan Biol Morya (5). 1983. 40-44. (Asteroidea).

Dean T A; Schroeter S C; Dixon J D Effects of grazing by two species of sea-urchins Strongylocentrotus franciscanus and Lytechinus anamesus on recruitment and survival of two species of kelp Macrocystis-Pyrifera and pterygophora-californica Mar Biol 78. 1984. 301-314.

De Burgh M E; Burke R D Uptake of dissolved amino-acids by embryos and larvae of Dendraster excentricus (Echinodermata Echinoidae) Can J Zool 61. 1983. 349-354.

Decker S J; Kinsey W H Characterization of cortical secretory vesicles from the sea-urchin Lytechinus variegatus egg. Dev Biol 96. 1983. 37-45.

De Grott P; Strickland W N; Brandt W F; Von Holt C The identification by sequence homology of stage specific sea-urchin Parechinus angulosus embryo histones H-1. Biochim Biophys Acta 747. 1983. 276-283.

Deleon D V; Cox K H; Anger L M; Angerer R C Most early variant histone messenger RNA is contained in the pronucleus of sea-urchin Strongylocentrotus purpuratus eggs. Dev Biol 100. 1983. 197-206.

De Petrocellis B; Pratibha M; Maharajan V Deoxy-CMP amino hydrolase activity during early sea-urchin development an example of negative enzyme control during embryogenesis. Exp Cell Res 152. 1984. 188-194.

De Ridder, C., M. Jangoux. 1984. Intracoelomic parasitic Sporozoa in the burrowing spatangoid echinoid Echinocardium cordatum: coelomic reaction and formation of brown bodies. Helgolander Meeresunters. 37, 225-231.

Detrich H W III; Wilson L Purification characterization and assembly properties of tubulin from unfertilized eggs of the sea-urchin Strongylocentrotus purpuratus. Biochemistry 22. 1983. 2453-2462.

Devlin R B Biogenesis of the mitochondrial ATPase from sea-urchin Lytechinus pictus embryos. J Biol Chem 257. 1982. 9711-9716.

Diehl W J Levels of cyclic AMP in the pyloric ceca tube feet and gonads of Luidia clathrata (Echinodermata Asteroidea) Comp Biochem Physiol B Comp Biochem 74. 1983. 753-754.

Diehl, W.J., J.M. Lawrence. 1984. The effect of salinity on coelomic fluid osmolyte concentration and intracellular water content in Luidia clathrata (Say) (Echinodermata: Asteroidea). Comp. Biochem. Physiol. 79A, 119-126.

Dini A; Mellon F A; Minale L; Pizza C; Riccio R; Self R; Zollo F Starfish saponins 11. Isolation and partial characterization of the saponins from the starfish Marthasterias glacialis. Comp Biochem Physiol B Comp Biochem 76. 1983. 839-844.

Domanski, P.A. 1984. Giant larvae: prolonged planktonic larval phase in the asteroid Luidia sarsi. Mar. Biol. 80, 189-195.

Donovan S K Tetrameric crinoid columnals from the Ordovician of Wales UK. Palaeontology 26. 1983. 845-850.

Doree M; Peaucellier G; Picard A Activity of the maturation promoting factor and the extent of protein phosphorylation oscillate simultaneously during meiotic maturation of starfish Marthasterias glacialis oocytes. Dev Biol 99. 1983. 489-501.

Doumen C; Decleir W Lactate dehydrogenase EC-1.1.1.27 and malate dehydrogenase EC-1.1.1.37 activities in the longitudinal muscle of Stichopus regalis (Echinodermata Holothuroidea) Comp Biochem Physiol B Comp Biochem 77. 1984. 373-378.

Duarte L F; Morgado E H Parasitic crustaceans of invertebrates associated with the sponge Zygomycale parishii and with the bryozoan schizoporella unicornis. Iheringia Ser Zool (62). 1983. 3-12. (Ophiuroidea).

Dube F; Guerrier P Calcium influx and stimulation of protein synthesis in sea-urchin Sphaerechinus-granularis eggs. Exp Cell Res 147. 1983. 209-215.

Duggins D O Starfish Pycnopodia helianthoides predation and the creation of mosaic patterns in a kelp dominated community. Ecology 64. 1983. 1610-1619.

Duinevelt, G.C.A., M.I. Jenness. 1984. Differences in growth rates of the sea urchin Echinocardium cordatum as estimated by the parameter omega of the von Bertalanffy equation applied to skeletal rings. Mar. Ecol. Progr. Ser. 19, 65-72.

Duncan R; Humphreys T Oligouridylic acid sequences present in sea-urchin Tripneustes gratilla maternal RNA decrease following fertilization Dev Biol 96. 1983. 258-262.

Durham J W; Mojab F Clypeaster biarritzensis (Echinoidea) in Lower Asmari Formation Early Oligocene of southwest Iran. Paleobios (41). 1983). 1-12.

Duque C; Bernal A; De Correa R; Morisaki M; Ikekawa N Free sterols of the sea-urchin Echinometra lucunter. Chem Pharm Bull 31. 1983. 1366-1369.

Ebeling, A.W., D. R. Laur, R.J. Rowley. 1985. Severe storm disturbances and reversal of community structure in a southern California kelp forest. Mar. Biol. 84, 287-294. (Echinoids).

Eckberg W R The effects of quercetin on meiosis initiation in clam Spisula-solidissima and starfish Asterias forbesi oocytes. Cell Differ 12. 1983. 329-334.

Edds K T; Chambers C; Allen R D Coelomocyte Motility. 3. Cell Motil 3. 1983. 113-122.

Ellers, O., M. Telford. 1984. Collection of food by oral surface podia in the sand dollar Echinarachnius parma (Lamarck). Biol. Bull. 166, 574-582.

Elhai J; Sandella C J Arachidonic acid and other fatty-acids inhibit secretion from sea-urchin Strongylocentrotus purpuratus eggs. Exp Cell Res 148. 1983. 63-72.

Elyakov G B; Kalinovskaya N I; Kalinovskii A I; Stonik V A; Kuznetsova T A Glycosides of marine invertebrates 13. New holothurinogenins of holothurin B-1 from Holothuria floridana. Chem Nat Compd 18. 1982. 298-302.

Elyakov G B; Kalinovskaya N I; Kalinovskii A I; Stonik V A; Kuznetsova T A Glycosides of marine invertebrates 13. New Holothurinogenins Holothurin B-1 From Holothuria floridana. Khim Prir Soedin (Tashk) (3). 1982. 323-327.

Elyakov G B; Mal'tsev I I; Kalinovskii A I; Stonik V A Structure of holotoxin A-1 the main triterpene glycoside from pacific food holothurian Stichopus japonicus Bioorg Khim 9. 1983. 280-282.

Emlet R B Locomotion drag and the rigid skeleton of larval echinoderms. Biol Bull 164. 1983. 433-445.

Emson R H; Crump R G Comparative studies on the ecology of Asterina gibbosa and Asterina phylactica at Lough Ine Cork Ireland. J Mar Biol Assoc U K 64. 1984. 35-54.

Emson R H; Wilkie I C An apparent instance of recruitment following sexual reproduction in the fissiparous brittle-star Ophiactis savignyi J Exp Mar Biol Ecol 77. 1984. 23-28.

Endo S; Toriyama M; Sakai H The mitotic apparatus with unusually many microtubules from sea-urchin eggs treated by hexylene glycol. Dev Growth Differ 25. 1983. 307-314.

Erber W The holothurian stone canal. A morphological investigation concerning the problem of the protocoel ampulla. Zool Syst Evolutionsforsch 21. 1983. 217-234.

Etkin L D; Roberts M Transmission of integrated sea-urchin histone genes by nuclear transplantation in Xenopus laevis. Science 221. 1983. 67-69.

Etkin L D; Pearman B; Roberts M; Bektesh S L Replication integration and expression of exogenous DNA injected into fertilized eggs of Zenopus laevis. Differentiation 26. 1984. 194-202.

Evans T; Rosenthal E T; Youngblom J; Distel D; Hunt T Cyclin a protein specified by maternal messenger RNA in sea-urchin eggs that is destroyed at each cleavage division. Cell 33. 1983. 389-396.

Fan H et al Binding azure a properties of the acidic mucopolysaccharide from Stichopus japonicus Selenka. J. Mar. Drugs China. 1. 1982. 8-12.

Fan H et al Study of the acidic polysaccharide from Acaudina leucoprocta. J Mar Drugs China. 3. 1982. 10-13.

Farrow G E Recent sediments and sedimentation in the Inner Hebrides Scotland UK. Proc. R. Soc Edinb Sect B (Biol Sci) 83 (1). 1983. 91-106. (Echinoidea).

Fawcett, M. H. 1984. Local and latitudinal variation in predation on an herbivorous marine snail. Ecology. 65, 1214-1230. (Asteroid).

Ferguson J E; Shen S S Evidence of phospholipase A-2 in the sea-urchin Lytechinus pictus egg its possible involvement in the cortical granule reaction. Gamete Res 9. 1984. 329-338.

Ferrand J-G Ultrastructural analysis of oocyte lysis and phagocytic activity in gonads of Asterina gibbosa Echinodermata Asteroidea. Int J Invertebr Reprod 6. 1983. 21-30.

Finkel T; Levitan H; Carroll E J Jr. Fertilization in the sea-urchin Arbacia punctulata inhibited by fluorescein dyes evidence for a plasma membrane mechanism . Gamete Res 4. 1981. 219-230.

Findlay J A; Agarwal V K; Moharir Y E Saponins of the starfish Asterias vulgaris. J Nat Prod (Lloydia) 47. 1984. 113-116.

Findlay J A; Agarwal V K Aglycones from the saponin of the starfish Asterias vulgaris. J Nat Prod (Lloydia) 46. 1983. 876-880.

Finley K J; Evans C R Summer diet of the bearded seal Erignathus barbatus in the Canadian High Arctic. Arctic 36. 1983. 82-89. (Holothuroidea).

Findlay R H; White D C The effects of feeding by the sand-dollar Mellita quinquiesperforata on the benthic microbial community. J Exp Mar Biol Ecol 72. 1983. 25-42.

Fisher G W; Rebhun L I Sea-urchin egg cortical granule exocytosis is followed by a burst of membrane retrieval via uptake into coated vesicles. Dev Biol 99. 1983. 456-472.

Flessa K W; Brown T J Selective solution of macroinvertebrate calcareous hard parts a laboratory study. Lethaia 16. 1983. 193-205.

Flytzanis C N; Brandhorst B P; Britten R J; Davidson E H Developmental patterns of cytoplasmic transcript prevalence in sea-urchin Strongylocentrotus purpuratus embryos. Deb Biol 91. 1982. 27-35.

Franzen-Bengtson C Radial perforations in crinoid stems from the Silurian of Gotland Sweden. Lethaia 16. 1983. 291-302.

Fregien N; Dolecki G J; Mandel M; Humphreys T. Molecular cloning of 5 individual stage specific and tissue specific messenger RNA sequences from sea-urchin Tripneustes gratilla pluteus embryos. Mol Cell Biol 3. 1983. 1021-1031.

Freidus D J; Schlegel R A; Williamson P Alteration of lipid organization following fertilization of sea-urchin eggs. Biochim Biophys Acta 803. 1984. 191-196.

Fry B; Scalan R S; Parker P L Carbon-13 to carbon-12 ratios in marine food webs of the Torres Strait Queensland Australia. Aust J Mar Freshwater Res 34. 1983. 707-716. (Holothuroidea).

Fujino Y; Yasumasu I Change in intracellular distribution of cyclic .AMP binding capacity in sea-urchin Strongylocentrotus intermedium embryos during early development. Gamete Res 6. 1982. 19-28.

Fujino Y; Yasumasu I Change in phosvitin kinase activity during early development of the sea-urchin Strongylocentrotus intermedius. Gamete Res 7. 1983. 249-258.

Fujino Y; Yasumasu I Changes in cyclic AMP dependent protein kinase activity in the 10000 gravity sediment of sea-urchin Strongylocentrotus intermedius embryos during early development. Gamete Res 7. 1983. 241-248.

Fujiwara A; Yasumasu I; Mohri H Change in the respiratory rate of sea-urchin Hemicentrotus pulcherrimus spermatozoa following sperm egg interaction in the absence of magnesium. Dev Growth Differ 25. 1983. 239-248.

Fujiwara A; Mita M; Hino A; Hamasaki T; Naitoh Y; Yasumasu I Inhibition of respiration in sea-urchin spermatozoa following interaction with fixed unfertilized eggs 7. Decrease in the rate of respiration in the spermatozoa of the sea-urchin Hemicentrotus pulcherrimus caused by long chain fatty acyl coenzyme a induced inhibition of the movement. Dev Growth Differ 25. 1983. 39-48.

Fun Z et al The gelatin from Asterias rollestoni Bell as plasma expander. J. Mar. Drugs China. 1. 1982. 13-17.

Gache C; Vacquier V D Transport of methionine in sea-urchin Lytechinus pictus sperm by a neutral amino-acid carrier. Eur J Biochem 133. 1983. 341-348.

Gache C; Niman H L; Vacquier V D Monoclonal antibodies to the sea-urchin egg vitelline layer inhibit fertilization by blocking sperm adhesion. Exp Cell Res 147. 1983. 75-84.

Gage J D Status of the deep sea echinoids Echinosigra phiale and Echinosigra-paradoxa. J Mar Biol Assoc U K 64. 1984. 157-170.

Gaginskaya E R; Kas'yanov V L; Kornienko E S Oocytes of starfish Henricia sp from the Gulf of Peter-the-Great USSR. Tsitologiya 25. 1983. 135-140.

Galey J; Goudard F; Pieri J; Fowler S W; Carvalho F P Tissue and subcellular distribution of californium-252 and americium-241 in the sea-star Marthasterias glacialis. Mar Biol 75. 1983. 253-260.

Galili G; Levy A; Jakob K M J Biol Chem 258. 1983. 11274-11279. (Echinoidea).

Garbers D L; Kopf G S; Tubb D J; Olson G Elevation of sperm cyclic AMP concentrations by a fucose sulfate-rich complex associated with eggs 1. Structural characterization. Biol Reprod 29. 1211-1220. (Echinoidea).

Garcia R; Paz-Aliaga B; Ernst S G; Crain W R Jr. Three sea-urchin actin genes show different patterns of expression muscle specific embryo specific and constitutive. Mol Cell Biol 4. 1984. 840-845.

Garneau F-X; Simard J-L; Harvey O Structure of psoluthurin a the major triterpene glycoside of the sea-cucumber Psolus fabricii. Can J Chem 61. 1983. 1465-1471.

Gavrilova G S; Mokretsova N D Salinity effects on the development of trepand Stichopus japonicus var armatus larvae and juveniles. Okeanologiya 23. 1983. 873-875.

Gebruk A V Abyssal holothurians of the genus Scotoplanes elasipoda (Elpidiidae). Zool Zh 62. 1983. 1359-1370.

Gebruk A V Protelpidia new-genus of abyssal holothurians (Elasipoda Elpidiidae) Zool Zh 62. 1983. 1038-1043.

Ghiold, J. 1984. Adaptive shifts in clypeasteroid evolution -- feeding strategies in the soft-bottom realm. N. Jb. Geol. Palaont. Abh. 169, 41-73.

Gibbons B H; Gibbons I R Lithium reversibly inhibits microtubule based motility in sperm flagella. Nature 309. 1984. 560-562. (Echinoidea).

Gibson A W; Burke R D Gut regeneration by morphallaxis in the sea-cucumber Leptosynapta clarki. Can J Zool 61. 1983. 2720-2732.

Girard J-P; Payan P; Sardet C Changes in intracellular cations following fertilization of sea-urchin Paracentrotus lividus eggs sodium ion hydrogen ion and sodium ion potassium ion. Exp Cell Res. 1982. 215-222.

Gluchowski E On microstructures of columnals of some Paleozoic crinoids. Acta Palaeontol Pol 27. 1982. 77-84.

Glynn, P. W. 1984. An amphionomid worm predator of the crown-of-thorns sea star and general predation on asteroids in eastern and western Pacific coral reefs. Bull Mar Sci. 35, 54-71.

Gnezdilova S M; Shchepin Yu V Histological and biochemical changes in a gonad of the sea-urchin Strongylocentrotus intermedius exposed to cadmium. Biol Morya. (6). 1983. 44-49.

Goldberg W M Cay Sal Bank Bahamas West-Indies: A biologically impro-verished physically controlled environment. Atoll Res Bull (271). 1983. 1-17 (Echinoidea).

Goodfellow R M; Goad L J The steryl sulfate content of echinoderms and some other marine invertebrates. Comp Biochem Physiol B Comp Biochem 76. 1983. 575-578.

Gordon K; Infante A A Utilization of maternal and embryonic histone RNA in early sea-urchin Strongylocentrotus purpuratus development. Dev Biol 95. 1983. 414-420.

Goudard, J. Galey, J. Pieri, S.W. Fowler, S. Heussner, J. La Rossa. 1985. Intracellular localization and binding of techntium-95m in the seastar Marthasterias glacialis. Mar. Biol. 85, 43-50.

Gradinaru E Upper Jurassic Oxfordian sedimentary rocks and acid and basic volcanites of the Camena Area Romania North Dobrogea. An Univ Bucur Geol 30. 1981. 89-110. (Crinoidea).

Green J D Sperm bind but do not unbind from the fixed sea-urchin Strongylocentrotus-purpuratus egg. Dev Growth Differ 25. 1983. 315-322.

Greenberg A R; Eylers J P Influence of ionic environment on the stress relaxation behavior of an invertebrate connective tissue. J Biomech 17. 1984. 161-166.

Greenwood P J Influence of an oil dispersant chemserveose-DH on the viability of sea-urchin Parechinus-angulosus gametes combined effects of temperature concentration and exposure time on fertilization. Aquat Toxicol 4. 1983. 15-30.

Grygier M J; Salvat M B Dendrogaster Argentinensis new-species a South American sea-star parasite Crustacea Ascothoracida. Proc Biol Soc Wash 97. 1984. 43-48.

Grygier M J Revision of Synagoga Crustacea Maxillopoda Ascothoracida J Nat Hist 17 (2). 1983. 213-240. (Crinoidea).

Guerrier P; Meijer L; Moreau M; Longo F J Hormone independent germinal vesicle breakdown induces cytoplasmic maturity in the starfish oocyte. J Exp Zool 226. 1983. 303-310.

Guille A A new genus and species of ophiacanthid brittle-star (Echinodermata Ophiuroidea) from the kerguelen Islands Indian Ocean with new taxonomic biogeographic and quantitative data on the echinoderm fauna. Mus. Natl. D'Histoire Naturelle, Paris, Fr. Aust Mus Syd Mem (16). 1982. 67-88.

Guillou M The growth of the sea-star Asterias rubens in the Bay of Douarnenez Finistere France. Ann Inst Oceanogr 59. 1983. 141-154.

Gundersen G G; Shapiro B M Hapten mediated immunopurification of membrane proteins labeled with fluorescein derivatives. Biochim Biophys Acta 799. 1984. 68-79.

Gupta V J Triassic System of Himalayas Asia. Res Bull Panjab Univ Sci 33. 1982. 187-202. (Holothuroidea).

Gupta V J Devonian fossils from Central Bhutan. Res Bull Panjab Univ Sci 33. 1982. 1-8. (Crinoidea).

Haggerty J G; Jackson R C Release of granule contents from sea-urchin Strongylocentrotus-purpuratus egg cortices new assay procedures and inhibition by sulfhydryl modifying reagents. J Biol Chem 258. 1983. 1819-1825.

Hamaguchi M S The role of intracellular PH in fertilization of sand-dollar Clypeaster japonicus eggs analyzed by microinjection method.

Haraguchi T; Nagano H Isolation and characterization of DNA polymerases from mature oocytes of the starfish Asterina pectinifera. J Biochem 93. 1983. 687-698.

Hamaguchi Y; Mabuchi I Effects of phalloidin microinjection and localization of fluorescein labeled phalloidin in living sand-dollar eggs Cell Motil 2. 1982. 103-114.

Harkey M A; Whiteley A H Cell specific regulation of protein synthesis in the sea-urchin Strongylocentrotus purpuratus gastrula a two dimensional electrophoretic study. Dev Biol 93. 1982. 453-462.

Harris, L G, A W Ebeling, D R Laur, B J Rowley. 1984. Community recovery after storm damage: a case of facilitation in primary succession. Science. 224, 1336-1338. (Echinoids)

Harris P Caffeine induced monaster cycling in fertilized eggs of the sea-urchin Strongylocentrotus purpuratus. Dev Biol 96. 1983. 277-284.

Harris P; Shaw G Intermediate filaments microtubules and microfilaments in epidermis of sea-urchin Strongylocentrotus purpuratus tube foot. Cell Tissue Res 236. 1984. 27-34.

Haude R; Thomas E Ophiuroids (Echinodermata) of the Upper Devonian in the Northern Rhenish Slate Mountains West Germany. Palaeontol Z 57. 1983. 121-142.

Hay M E; Colbun T; Downing D Spatial and temporal patterns in herbivory on a Caribbean fringing reef the effects on plant distribution. Oecologia. 58. 1983. 299-308. (Echinoidea).

Hay, M.E. 1984. Patterns of fish and urchin grazing on Caribbean coral reefs: are previous results typic 1. Ecology. 65, 446-454.

Hay, M.E. 1984. Predictable spatial escapes from herbivory: how do these affect the evolution of herbivore resistance in tropical marine communities. Oecologia. 64, 396-407. (echinoids).

Hay, M.E.; S D Gaines. 1984. Geographic differences in herbivore impact: do Pacific herbivores prevent Caribbean seaweeds from colonizing via the Panama canal? Biotropica. 16, 24-30. (echinoids)

Hayakawa Y; Kittaka J Simulation of feeding behavior of sea-urchin Strongylocentrotus nudus Bull Jpn Soc Sci Fish 50. 1984. 233-240.

Hendler, G., and J.E. Miller. 1984. Ophioderma devaneyia and Ophioderma ensiferum, new brittlestar species from the western Atlantic (Echinodermata: Ophiuroidea). Proc. Biol. Soc. Wash. 97, 442-461.

Hendler, G, J.E. Miller. 1984. Feeding behavior of Asteropora annulata, a gorgonocephalid brittlestar with unbranched arms. Bull. Mar. Sci. 34, 449-460.

Hendler, G. 1984. Brittlestar color-change and phototaxis (Echinodermata: Ophiuroidea: Ophiocomidae). P S Z N I: Mar Ecol. 5, 379-401.

Hernandez D A Holothuroidea of the southwestern Atlantic 1. Trachythone spp Mitt Hamb Zool Mus Inst 79. 1982. 251-262.

Hidaka M; Takahashi K Fine structure and mechanical properties of the catch apparatus of the sea-urchin Anthocidaris crassispina spine a collagenous connective tissue with muscle-like holding capacity. J Exp Biol 103. 1983. 1-14.

Hidaka M Effects of certain physicochemical agents on the mechanical properties of the catch apparatus of the sea-urchin Anthocidaris crassispina spine. J Exp Biol 103. 1983. 15-30.

Hill R B Effects of calcium antagonists on contraction of a holothurian muscle. Comp Biochem Physiol C Comp Pharmacol Toxicol 76. 1983. 1-8.

Hill R B Restoration of contractility by de polarizing agents and by calcium after caffeine treatment of holothurian muscle. Comp Biochem Physiol C Comp Pharmacol 75. 1983. 5-16.

Hill, R.B. 1983. Effects of calcium antagonists on contraction of a holothurian muscle. Comp. Biochem. Physiol. 76C, 1-8.

Himmelman J H; Cardinal A; Bourget E Community development following removal of sea-urchins Strongylocentrotus droebachiensis from the rocky subtidal zone of the St-Lawrence Estuary eastern Canada. Oecologia 59. 1983. 27-39.

Himmelman J H; Lavergne Y; Axelsen F; Cardinal A; Bourget E Sea-urchins in the St-Lawrence Estuary Canada their abundance size structure and suitability for commercial exploitation. Can J Fish Aquat Sci 40. 1983. 474-486.

Hinkley R E; Webster D R; Rubin R W Further studies on dividing sea-urchin Lytechinus variegatus eggs exposed to the volatile anesthetic halothane. Exp Cell Res 141. 1982. 492-497.

Hirano, K-I, M Masuda, H Sato. 1984. Ultrastructural study of asters induced by microinjection with sperm centriolar fraction in sea urchin eggs. Develop, Growth and Differ. 26, 435-444.

Hird F J R; Cianciosi S C; McLean R M; Niekrash R E Possible significance of the transamidination reaction in evolution. Comp Biochem Physiol B Comp Biochem 76. 1983. 489-496. (Asteroidea).

Hisanaga S-I; Sakai H Cytoplasmic dynein of the sea-urchin Hemicentrotus pulcherrimus Egg 2. Purification Characterization and interactions with microtubules and calcium calmodulin. J Biochem 93. 1983. 87-98.

Hoare R D; Sturgeon M T Pennsylvanian Echinoid Pedicellariae. J Paleontol 58. 1984. 895-897.

Hoffman S G; Robertson D R Foraging and reproduction of two caribbean reef toadfishes (Batrachoididae). Bull Mar Sci 33. 1983. 919-927. (Echinoidea).

Holland L Z; Cross N L The pH within the jelly coat of sea-urchin eggs. Dev Biol 99. 1983. 258-260.

Holland, N.D. 1984. Epidermal cells. In: J. Bereiter-Han, A.G. Matolsy, K.S. Richards (eds). Biology of the integument. 1, 756-774. (Echinoderms).

Holloway D J; Jell P A Silurian and Devonian edrioasteroids from Australia. J Paleontol 57. 1983. 1001-1016.

Holme N A Fluctuations of Ophiothrix fragilis in the western English Channel. J Mar Biol Assoc U K 64. 1984. 351-378.

Holzman T F; Williams D C; Russo S F Evidence for the presence of a trypsinogen-like zymogen in the tissues of the sea-star Pisaster ochraceus. Physiol Chem Phys 14. 1982. 565-580.

Honda H; Dan-Sohkawa M; Watanabe K Geometrical analysis of cells becoming organized into a tensile sheet the blastular wall in the starfish Asterina pectinifera. Differentiation 25. 1983. 16-22.

Honda H; Yamanaka H; Dan-Sohkawa M A computer simulation of geometrical configurations during cell division. J Theor Biol 106. 1984. 423-436. (Asteroidea).

Hosoya H; Mabuchi I; Sakai H Actin modulating proteins in the sea-urchin Anthocidaris crassispina egg 1. Analysis of G actin binding proteins by DNAse I affinity chromatography and purification of a 17000 molecular weight component. J Biochem 92. 1982. 1853-1862.

Houston, K.A., R.L. Haedrich. 1984. Abundance and biomass of macrobenthos in the vicinity of Carson Submarine Canyon, northwest Atlantic Ocean. Mar. Biol. 82, 301-305. (Echinoderms)

Hulser D; Schatten G Bioelectric responses at fertilization separation of the events associated with insemination from those due to the cortical reaction in sea-urchin Lytechinus variegatus. Gamete Res 5. 1982. 363-378.

Hyatt H A; Shure M S; Begg D A Induction of shape transformation in sea-urchin coelomocytes by the calcium ionophore A-23187. Cell Motil 4. 1984. 57-72.

Hyden G; Begg J G; Campbell H J; Campbell J D Permian fossils from the Countess Formation Mossburn Southland New-Zealand. N Z J Geol Geophys 25. 1982. 101-108. (Crinoidea).

Ichihara A; Oikawa H; Hashimoto M; Sakamura S; Haraguchi T; Nagano H A phytotoxin betaenone C and its related metabolites of phomabetae. Agric Biol Chem 47. 1983. 2965-2968.

Imschenetzky M; Massone R; Gamboa S; Puchi M Intracellular distribution of the histones synthesized during the 1st cleavage cycle of the development of the sea-urchin Tetrapygus niger. Cell Mol Biol 29. 1983. 79-84.

Isaeva V A Spiculogenesis in sea-urchin Strongylocentrotus nudus blastula cell cultures. Tsitologiya 23. 1981. 707-710.

Isaeva V V; Presnov E V The stabilization following fertilization and the maintenance of experimentally altered egg shapes during cleavage in the sea-urchin. Tsitologiya 25. 1983. 200-203.

Isay S V; Busarova N G Fatty-acid composition of marine organisms 1. Unsaturated fatty-acids of Japan Sea invertebrates. Comp Biochem Physiol B Comp Biochem 77. 1984. 803-810. (Echinoidea)

Ishida K; Yasumasu I Changes in molecular weight and affinity for cyclic AMP of cyclic AMP phosphodiesterase in sea-urchin Anthrocidaris crassispina eggs. Int J Biochem 15. 1983. 303-308.

Ishimoda-Takagi T; Ozaki S Effect of trichloro acetic-acid on the isolation of tropomyosin from sea-urchin Anthocidaris crassispina lantern muscle. J Biochem 93. 1983. 801-806.

Itakura Y; Komori T; Kawasaki T Biologically active glycosides from Asteroidea 4. Steroid oligoglycosides from the starfish Astropecten latespinosus. Liebigs Ann Chem (1). 1983. 56-68.

Itakura Y; Komori T; Kawasaki T Steroid oligoglycosides from the starfish Asterias amurensis versicolor 1. Structural elucidation of a new oligoglycoside sulfate. Liebigs Ann Chem (12). 1983. 2079-2091.

Itoh, T.J., H. Sato. 1984. The effects of deuterium oxide (2H20) on the polymerization of tubulin in vitro. Biochim. Biophys. Acta. 800, 29- 21-27.

Iwata M; Nakano E Characterization of sea-urchin Pseudocentrotus depressus fibronectin Biochem J 215. 1983. 205-208.

Iwata M; Nakano E Cell to substratum adhesion of dissociated embryonic cells of the sea-urchin Pseudocentrotus depressus Wilhelm Roux's Arch Dev Biol 193. 1984. 71-77.

Iwasa F; Mohri H Calmodulin binding proteins in the cytosol extract of sea-urchin eggs J Biochem 94. 1983. 575-588.

Izutsu, K., H. Sato. 1984. Cell division: mitosis and meiosis in eukaryotes. Cell Structure and Function. 9 (suppl.), S73-S79. (echinoids, asteroids)

Jackson L E; Fontaine A R Nutrient and nitrogenous waste concentrations in the fluid transport systems of a holothurian Cucumaria Miniata Comp Biochem Physiol A Comp Physiol 78. 1984. 123-128.

Jaeger M Rare crinoids of the Upper Cretaceous from the Hannover Area West Germany Ber Naturhist Ges Hannover (125). 1982. 61-88.

Jaffe L F Sources of calcium in egg activation a review and hypothesis Dev Biol 99. 1983. 265-276. (Echinoidea).

James N P; Klappa C F Petrogenesis of early Cambrian reef limestones Labrador Canada J Sediment Petrol 53. 1983. 1051-1096.

Jangoux, M. 1984. Diseases of echinoderms. Helgolander Meeresunters. 37, 207-216.

Jangoux, M. 1984. Les astérides littoraux de Nouvelle-caledonie. Bull. Mus. Natn. Hist. Nat., Paris. 4e ser., 6 279-293.

Jell P A; Holloway D J Devonian and Late Silurian paleontology of the Winneke Reservoir site Christmas Hills Victoria Australia R Soc Victoria Proc 95. 1983. 1-22. (crinoidea).

Jensen M Morphology and classification of Euechinoidea A cladistic analysis Vidensk Medd Dan Naturhist Foren (143). 1982. 7-100.

Jesionek-Szymanska W Morphology and microstructure of oligolamellar teeth in Paleozoic echinoids 2. Givetian Middle Devonian stage of evolution of oligolamellar teeth Acta Palaeontol Pol 27. 1982. 195-211.

Johnson C H; Clapper D L; Winkler M M; Lee H C; Epel D A volatile inhibitor immobilizes sea-urchin sperm in semen by depressing the intracellu ar pH Dev Biol 98. 1983. 493-501.

Johnson P J; Foran D R; Moore G P Organization and evolution of the actin gene family in sea-urchins Mol Cell Biol 3. 1983. 1824-1833.

Jones G P Population ecology of the temperate reef fish Pseudolabrus celidotus (Pisces Labridae) 1. Factors influencing recruitment J Exp Mar Biol Ecol 75. 1984. 257-276. (echinoidea).

Jurisic M; Roque S; Lopez I; Herrera F C Role of chloride in isoosmotic intracellular regulation in Holothuria glaberrima Comp Biochem Physiol A Comp Physiol 76. 1983. 831-838.

Kalinin V I; Stonik V A Glycosides of marine invertebrates structure of holothurin A-2 from the holothurian Holothuria edulis Khim Prir Soedin (Tashk) (2). 1982. 215-219.

Kalinin V I; Stonik V A Glycosides of the holothurian Bohadschia graeffei Chem Nat Compd 18. 1982. 758-759.

Kalinina E I; Lavrova O B; Andreeva L F DNA synthesis and cell cycles in early embryogenesis of the starfish Asterias rubens 2. Late cleavage blastula and gastrula Ontogenez 14. 1983. 255-260.

Kalinovskaya N I; Kuznetsova T A; Popov A M; Antonov S A; Elyakov G B Steroid metabolites of the far-eastern holothurian Stichopus japonicus Comp Biochem Physiol B Comp Biochem 76. 1983. 167-172.

Kalinovskii A I; Sharypov V F; Afiyatullov Sh Sh; Kuznetsova T A; Stonik V A; Elyakov G B Carbon-13 NMR approach to some problems of stereochemistry of aglycons of holothurian glycosides Bioorg Khim 9. 1983. 1558-1565.

Kallenbach R J The induction of de-novo centrioles in sea-urchin eggs a possible common mechanism for centriolar activation among parthenogenetic procedures Eur J Cell Biol 30. 1983. 159-166.

Kallenbach R J Endoplasmic reticulum whorls as a source of membranes for early cytaster formation in parthenogenetically stimulated sea-urchin Strongylocentrotus purpuratus eggs Cell Tissue Res 236. 1984. 237-244.

Kallenbach R J De-novo centrioles originate at sites associated with annulate lamellae in sea-urchin Strongylocentrotus purpuratus eggs Biosci Rep 2. 1982. 959-966.

Kammer T W Crinoids from the New-Providence shale member of the Borden Formation Mississippian in Kentucky and Indiana USA J Paleontol 58. 1984. 115-130.

Kane R E Interconversion of structural and contractile actin gels by insertion of myosin during assembly J Cell Biol 97. 1983. 1745-1752.

Kaplan, S.W. 1984. The association between the sea anemone Metridium senile (L.) and the mussel Mytilus edulis (L.) reduces predation by the starfish Asterias forbesi (Desor). J. Exp. Mar. Biol. Ecol. 79, 155-157.

Kato K H; Sugiyama M Induction of the acrosome reaction of sea-urchin spermatozoa by means of urea Dev Growth Differ 25. 1983. 153-162.

Kato K H; Iwaikawa Y; Sugiyma M Fusion of spermatozoa with embryonic cells and somatic cells in the sea-urchin Dev Growth Differ 25. 1983. 571-584.

Katow H; Yamada K M; Solursh M Occurrence of fibronectin on the primary mesenchyme cell surface during migration in the sea-urchin Lytechinus pictus embryo Differentiation 22. 1982. 120-124.

Katula K S High mobility group nonhistone chromosomal proteins of the developing sea-urchin embryo Dev Biol 98. 1983. 15-27.

Keats, D.W., D.H. Steele, G.R. South. 1983. Foodrelations and short term aquaculture potential of the green sea urchin (Strongylocentrotus droebachiensis) in Newfoundland. MSRL Technical Report No. 24, Memorial University of Newfoundland.

Keats, D.W., D.H. Steele, G.R. South. 1984. Depth-dependent reproductive output of the green sea-urchin Strongylocentrotus droebachiensis (OF Müller), in relation to the nature and availability of food. J. exp. mar. Biol. Ecol. 80, 77.

Keller B D Coexistence of sea-urchins in seagrass meadows and experimental analysis of competition and predation Ecology 64. 1983. 1581-1598.

Kerkis A Yu; Isaeva V V An electron microscope study of spiculogenesis in the culture of embryonic cells of a sea-urchin Strongylocentrotus nudus Ontogenez 15. 1984. 34-40.

Kesling R V Acinetaster konieckii new-species a new brittle-star from the Middle Devonian Arkona Shale Ontario Canada Contrib Mus Paleontol Univ Mich 26. 1982. 71-81.

Kesling R V Arkonaster new-genus a new multiarmed starfish from the Middle Devonian Arkona shale of Ontario Canada Contrib Mus Paleontol Univ Mich 26. 1982. 83-115.

Kholodov V I; Nguyen Tak An; Ryabushko V I Some features of Trophodynamics and metabolism in sexually immature sea-urchin Strongylocentrotus intermedius Biol Morya (3). 58-65.

Khotimchenko Yu S Adrenotropic and cholinotropic drug effects on oocyte growth maturation and spawning in the sea-urchin Strongylocentrotus nudus Biol Morya (2). 1982. 57-63.

Khristoforova N K; Gnezdilova S M; Vlasova G A Effect of cadmium on gametogenesis and offspring of the sea-urchin Strongylocentrotus intermedius Mar Ecol Prog Ser 17. 1984. 9-14.

Kicha A A; Kalinovsky A I; Levine E V; Stonik V A; Elyakov G B Tetrahedron Lett 24. 1983. 3893-3896.

Kicha A A; Kalinovskii A I; Levina E V; Stonik V A; Elyakov G B Polyhydroxylated sterols from the starfish Patiria pectinifera Bioorg Khim 9. 1983. 975-977.

Kier P M Fossil spatangoid echinoids of Cuba Smithson Contrib Paleobiol (55). 1984. III-VI, 1-336.

Kier, P.M. 1984. Upper cenozoic echinoids from the Lee Creek Mine. Smithsonian contributions to Paleobiology (53), 499-507.

Kier, P.M. 1984. Echinoids from the Triassic (St. Cassian) of Italy, their lantern supports, and a revised phylogeny of Triassic echinoids. Smithsonian contributions to Paleobiology (56).

Kim H S; Lee I K; Koh C H; Kim I H; Suh Y B; Sung N Studies on the marine benthic communities in intertidal and subtidal zones 1. Analysis of benthic community structures at Aninjin eastern coast of Korea. Proc Coll Nat Sci (Seoul) 8. 1983. (echinoidea)

Kinoshita S The role of proteoglycans in the differentiation of embryonic cells of sea-urchins J Fac Sci Univ Tokyo Sect IV Zool 15. 1982. 99-106.

Kinoshita S; Yoshii Y Permeable embryonic cells of sea-urchins as a model for studying nucleus cytoplasm interactions Experientia 39. 1983. 189-190.

Kishimoto T; Usui N; Kanatani H Breakdown of starfish Asterina pectinifera ovarian follicle induced by maturation promoting factor Dev Biol 101. 1984. 28-34.

Klinger, T.S. 1984. Activities and kinetics of digestive alpha- and beta-glucosidase and beta-galactosidase of five species of echinoids (Echinodermata). Comp. Biochem. Physiol. 78A, 579-600.

Klinger, T.S., J. M. Lawrence. 1984. Phagostimulation of Lytechinus variegatus (Lamarck) (Echinodermata: Echinoidea). Mar. Behav. Physiol. 11, 49-67.

Klikushin V G Late Cretaceous sea-lilies from Mangyshlak Kazakh-SSR USSR Paleontol Zh (4). 1982. 98-103.

Knowles J A; Childs G J Temporal expression of late histone messenger RNA in the sea-urchin Lytechinus pictus Proc Natl Acad Sci U S A 81. 1984. 2411-2415.

Kochetkov N K; Smirnova G P A disialo glyco lipid with two sialic-acid residues located in the inner part of the oligosaccharide chain from hepatopancreas of the starfish Patiria pectinifera Biochim Biophys Acta 759. 1983. 192-198.

Kojima M K Effects of deuterium oxide on parthenogenetic activation and cleavage in the sea-urchin egg Dev Growth Differ 26. 1984. 61-72.

Kolata D R Cataraquicrinus elongatus new-species a new disparid inadunate crinoid from the Middle Ordovician of Ontario Canada Can J Earth Sci 20. 1983. 1609-1613.

Komatsu M Development of the sea-star Archaster typicus with a note on male on female superposition Annot Zool Jpn 56. 1983. 187-195.

Kominami T Establishment of embryonic axes in larvae of the starfish Asterina pectinifera J Embryol Exp Morphol 75. 1983. 87-100.

Komori T; Krebs H C; Itakura Y; Higuchi R; Sakamoto K; Taguchi S; Kawasaki T Biologically active glycosides from Asteroidea 6. Steroid oligoglycosides from the starfish Luidia maculata 1. Structures of a new aglycone sulfate and two new oligoglycoside sulfates Liebigs Ann Chem (12). 1983. 2092-2113.

Komori T; Matsuo J; Itakura Y; Sakamoto K; Ito Y; Taguchi S; Kawasaki T Biologically active glycosides from Asteroidea 2. Steroid oligoglycosides from the starfish Acanthaster planci 1. Isolation and structure of the oligoglycoside sulfates Liebigs Ann Chem (1). 1983. 24-36.

Komori T; Nanri H; Itakura Y; Sakamoto K; Taguchi S; Higuchi R; Kawasaki T; Higuchi T Biologically active glycosides from Asteroidea 3. Steroid oligoglycosides from the starfish Acanthaster planci 2. Structures of two newly characterized genuine sapogenins and an oligoglycoside sulfate Liebigs Ann Chem (1). 1983. 37-55.

Kopf G S; Moy G W; Vacquier V D Isolation and characterization of sea-urchin Strongylocentrotus purpuratus egg cortical granules J Cell Biol 95. 1982. 924-932.

Kostetskii E Ya; Gerasimenko N I; Naumenko N V; Vaskovskii V E Lipids of marine organisms 1. Identification of hydroxy acid containing Sphingomyelin in the starfish Distolasterias nipon· Bioorg Khim 7. 1981. 1069-1074.

Kostetsky, E.Y., N.I. 1984. Gerasimenko. Phospholipid composition and phylogeny of echinoderms. Mar. Biol. Vlad. (1), 39-46.

Kostyleva E I Effect of histone on incorporation of tritium labeled thymidine into developing sea-urchin Strongylocentrotus droebachiensis embryos Tsitologiya 25. 1983. 565-571.

Koukouras A S; Sinis A I Benthic fauna of the north Aegean Sea 2. Crinoidea and Holothurioidea (Echinodermata) Vie Milieu 31. 1981. 271-282.

Kovesdi I; Preugschat F; Stuerzl M; Smith M J Actin genes from the sea-star Pisaster Ochraceus Biochim Biophys Acta 782. 1984. 76-86.

Krebs H C; Komori T; Kawasaki T Biologically active glycosides from Asteroidea 7. Steroid oligoglycosides from the starfish Luidia maculata 2. Structure of two new oligoglycoside sulfates Liebigs Ann Chem (2). 1984. 296-305.

Kretzler J E Echinophilus xiphidion new-species Ostracoda Paradoxostom tidae parasitic on regular echinoids of the northeastern Pacific J Crustacean Biol 4. 1984. 333-340.

Kropp R K Responses of five holothurian species to attacks by a predatory gastropod Tonna-perdix Pac Sci 36. 1982. 445-452.

Kukhanova M K; Kochetkova S V; Kraevskii A A; Terent'ev L L; Rasskazov V A Inhibition of DNA biosynthesis in sea-urchin Paracentrotus lividus embryos by 2' 3' Dideoxy-3'-amino Nucleosides Biokhimiya 48. 1983. 1747-1751.

Kuleva N V; Shanina N A; Krasovskaya I E Dynein ATPase by oxygen-18 labeled water to oxygen-16 labeled inorganic phosphate Biokhimiya 48. 1983. 1691-1696.

Kuriyama R; Borisy G G Cytasters induced within unfertilized sea-urchin eggs J Cell Sci (61). 1983. 175-190.

Kuznetsova T A; Kalinovskaya N I; Kalinovskii A I; Oleinikova G K; Rov ykh N V; Elyakov G V Glycosides of marine invertebrates 14. Structure of holothurin B-1 from the sea-cucumber Holothuria floridana Khim Prir Soedin (Tashk) (4). 1982. 482-484.

Lambert A; De Vos L; Jangoux M Functional morphology of the pedicellariae of the asteroid Marthasterias glacialis (Echinodermata). Zoomorphology 104. 1984. 122-130.

Lambert, A., L. De Vos, M. Jangoux. 1984. Functional morphology of the pedicellariae of the asteroid Marthaterias glacialis (Echinodermata) Zoomorphology. 104, 122-130.

Lambert P British-Columbia Canada marine faunistic survey report holothurians from the northeast Pacific Can Tech Rep Fish Aquat Sci (1234). I-IV, 1-30.

Lansman J B Voltage clamp study of the conductance activated at fertilization in the starfish Mediaster aequalis egg J Physiol 345. 1983. 353-372.

Lau J T Y; Lennarz W J Regulation of sea-urchin Strongylocentrotus purpuratus glycoprotein messenger RNA during embryonic development Proc Natl Acad Sci U S A 80. 1983. 1028-1032.

Lavrova O B; Andreeva L F DNA synthesis and cell cycles in the early embryogenesis of the starfish Asterias rubens 1. Early cleavage Ontogenez 14. 1983. 30-35.

Lavrova O B; Andreeva L F Size of replicon and rate of DNA replication in the early embryogenesis of the starfish Asterias rubens Ontogenez 13. 1982. 645-649.

Lawrence J M; Glynn P W Absorption of nutrients from the coral Pocillopora-damicornis by the echinoid Eucidaris thouarsii Comp Biochem Physiol A Comp Physiol 77. 1984. 111-112.

Leclerc M; Luquet G Effect of in-vivo inoculation of bacteria on the spontaneous cytotoxicity of axial organ cells from Asterias rubens Immunol Lett 6. 1982. 107-108.

Lee D E; Carter R M; King R P; Cooper A F An Oligocene rocky shore community from Mount Luxmore Fiordland New Zealand N Z J Geol Geophys 26. 1983. 123-126. (Echinoidea)

Lee H H; Xu C H Effects of metals on sea-urchin development a rapid bioassay Mar Pollut Bull 15. 1984. 18-21.

Lee H C; Epel D Changes in intracellular acidic compartments in sea-urchin eggs after activation Dev Biol 98. 1983. 446-454.

Lee H C Sodium and proton transport in flagella isolated from sea-urchin Strongylocentrotus purpuratus spermatozoa J Biol Chem 259. 1984. 4957-4963.

Lee J J; Shott R J; Rose S J III; Thomas T L; Britten R J; Davidson E H Sea-urchin Strongylocentrotus purpuratus actin gene subtypes gene number linkage and evolution J Mol Biol 172. 1984. 149-176.

Lessios, H.A., P.W. Glynn, D.R. Robertson. 1983. Mass mortalities of coral reef organisms. Science.

Lessios, H.A. 1984. Possible prezygotic reproductive isolation in sea urchins separated by the Isthmus of Panama. Evolution. 38, 1144-1148.

Lessios, H.A., J.D. Cubit, D.R. Robertson, M.J. Shulman, N.M.R. Parker, S.D. Garrity, S.V. Levings. 1984. Mass mortality of Diadema antillarum on the Caribbean Coast of Panama. Coral Reefs. 3, 173-182.

Lessios, H.A., D.R. Robertson, J.D. Cubit. 1984. Spread of Diadema mass mortality through the Caribbean. Science. 226, 335-337.

Levin, A.V., E.V. Levina, S.V. Levin. 1984. The response of the asteroids Asterias amurensis and Distolasterias nipon to homogenates and chemical substances from far-eastern starfishes. Biol. Morya. (5), 40-45.

Levin V S New data on the sea-cucumber Scoliodotella lindbergi new-combination Apoda Chiridotidae Zoll Zh 61. 1982. 1916-1920.

Levin V S An abnormal specimen of Strongylocentrotus nudus (Camarodonta Strongylocentrotidae) Zool Zh 62. 1983. 453-455.

Levin, V. 1984. Chemical characters and taxonomic revision of holothurian Bohadschia graeffei (Semper) as refer to erection of a new genus. Biol. Morya. (3), 33-38

Levin, V. 1984. Duasmodactyla kurilensis (Dendrochirota, Phyllophoridae) --a new species of the dendrochirote nolothurians from Onekotan Islan (the Kuril Islands). Biol. Morya. (4), 69-72.

Levitina M V Comparative biochemical study of cerebrosides and sulfocerebrosides in invertebrate cerebral ganglia. Zh Evol Biokhim Fiziol 19. 1983. 529-533. (Echinoidea)

Lewis J B; Storey G S Differences in morphology and life history traits of the echinoid Echinometra lucunter from different habitats Mar Ecol Prog Ser 15. 1984. 207-211.

Li, C et al The inhibitory activity of extract of Holothuria leucospilota on HeLa cells. J Mar Drugs China. 2. 1982. 23-24.

Li, G A report on the echinoderms from the Xisha-Zhongsha Islands, Guang-Dong Province, China. Contr Mar Biol Res South China Sea. 1. 1983. 256-274

Liao Y A new genus of clypeasteroid sea urchin from Huang Hai. Oceanol Limnol Sinica. 10. 1979. 67-72.

Liao Y The echinoderms of Xisha Islands Gunagdong Province, China IV. Asteroidea. Stud Mar Sinica. 17. 1980. 153-171.

Liao Y A new echinoid with sexual dimorphism from the late Tertiary deposits of Beibuwan Guangxi. Acta Papaeontol Sinica. 20. 1981. 482-484.

Liao Y Two new ophiurans from the Gulf of Beibuwan. Oceanol Limnol Sinica. 13. 1982. 562-569.

Liao Y A new genus of starfish from the continental shelf of the East China Sea. Stud Mar Sinica. 19. 1982. 93-97.

Liao Y Ophiocentrus anomalus sp. nov. of the family Amphiuridae (Ophiuroidea) from southern China. Oceanol Limnol Sinica. 14. 1983. 407-410.

Liao Y On Amphilimna polyacantha sp. nov. and the systematic position of A. multispina Koehler (Ophiuroidea). Chin J Oceanol Limnol 1. 1983. 177-182.

Liao Y The echinoderms of the Xisha Islands, Guangdong Province, China v. crinoidea. Stud Mar Sinica 20. 1983. 263-277.

Liao Y A new species of goniasterid sea-star from the Huang Hai Sea, China. Chin J Oceanol Limnol 1. 1983. 367-369.

Liao Y The aspidochirote holothurians of China. Stud Mar Sinica. 23. 1984. 221-247.

Liao Y Notes on the genus Acaudina Clark 1907 (Echinodermata: Holothuroidea) of China. Stud Mar Sinica. 23. 1984. 249-255.

Liao Y Rosaster attenuatus, a new species of the family Goniasteridae (Asteroidea) from the East China Sea. Oceanol Limnol Sinica. 15. 1984. 478-481.

Liao Y The edible holothurians of Sri Lanka. Mar Sci China. 6. 1984. 42-43.

Lieberman M; John D M; Lieberman D Factors influencing algal species assemblages on reef and cobble substrate off Ghana J Exp Mar Biol Ecol 75. 1984. 129-144 (Echinoidea).

Liebermann D; Hoffmann-Liebermann B; Weinthal J; Childs G; Maxson R; Mauron A; Cohen S N; Kedes L An unusual transposon with long terminal inverted repeats in the sea-urchin Strongylocentrotus purpuratus Nature 306. 1983. 342-347.

Linck R W; Langevin G L Structure and chemical composit on of insoluble filamentous components of sperm flagellar microtubules J Cell Sci 58. 1982. 1-22.

Lissner A L Relationship of water motion to the shallow water distribution and morphology of two spp. of sea-urchins J Mar Res 41. 1983. 691-710.

Little M; Luduena R F; Morejohn L C; Asnes C; Hoffman E The tubulins of animals plants fungi and protists implications for metazoan evolution Origins Life 13. 1984. 169-176. (Echinoidea)

Littler M M; Littler D S Relationships between macroalgal functional form groups and substrata stability in a subtropical rocky intertidal system J Exp Mar Biol Ecol 74. 1984. 13-34.

Littler M M; Littler D S Heteromorphic life history strategies in the brown alga Scytosiphon lomentaria J Phycol 19. 1983. 425-431. (Echinoidea)

Liu S H; Mcchesney M B; Prendergast R A Kinetics of tumor cell cytostasis by sea-star Asterias forbesi factor activated macrophages Dev Comp Immunol 7. 1983. 545-554.

Logan A; Page F H; Thomas M L H Depth zonation of epibenthos on sublittoral hard substrates off Deer Island Bay of Fundy Canada Estuarine Coastal Shelf Sci 18. 1984. 571-592. (Echinoidea)

Lois A F; Neill D J; Carroll E J Jr Acid release cytoplasmic alkalinization and chromosome condensation during sea-urchin Strongylocentrotus purpuratus fertilization and amine induced parthenogenesis Gamete Res 7. 1983. 123-132.

Longo F J Transformations of sperm nuclei incorporated into sea-urchin Arbacia punctulata embryos at different stages of the cell cycle Dev Biol 103. 1984. 168-181.

Longo F J Cytoplasmic and sperm nuclear transformations in fertilized ammonia activated sea-urchin Arbacia punctulata eggs Gamete Res 8. 1983. 65-78.

Longo F J Nucleoprotein changes during male pronuclear development as determined by the ammoniacal silver reaction Gamete Res 7. 1983. 351-366. (Echinoidea).

Lucas, J.S. 1984. Growth, maturation and effects of diet in Acanthaster planci (L.) (Asteroidea) and hybridges reared in the laboratory. J. exp. mar. Biol. Ecol. 79, 129-147.

Luquet G; Brillouet C; Leclerc M Mixed lymphocyte reaction like reaction between axial organ cells from asterids Immunol lett 7 (5). 1984. 235-238.

Luquet G; Leclerc M Spontaneous and induced cytotoxicity of axial organ cells from Asterias rubens (Asterioid; Echinodermata) Immunol Lett 6. 1983. 339-342.

Lyle J M Food and feeding habits of the lesser spotted dogfish Scyliorhinus canicula in Isle of Man UK waters J Fish Biol 23 (6). 1983 (Recd. 1984). 725-738.

Lynn D A; Angerer L M; Bruskin A M; Klein W H; Angerer R C Localization of a family of messenger RNA in a single cell type and its precursors in sea-urchin Strongylocentrotus purpuratus embryos Proc Natl Acad Sci U S A 80. 1983. 2656-2660.

Lynn J W; Chambers E L Voltage clamp studies of fertilization in sea-urchin Lytechinus variegatus eggs 1. Effect of clamped membrane potential on sperm entry activation and development Dev Biol 102. 1984. 98-109.

Ma K et al Experimental studies on the antimetastatic action of acidic mucopolysaccharide of Stichopus japonicus Selenka against the implanted tumors of lung in mice. J Mar Drugs China. 1. 1982. 21-24.

Mabuchi I Effects of muscle proteins on the interaction between actin and an actin depolymerizing protein from starfish Asterias amurensis oocytes J Biochem 92. 1982. 1439-1448.

Mabuchi I An actin depolymerizing protein depactin from starfish Asterias amurensis oocytes properties and interaction with actin J Cell Biol 97. 1983. 1612-1622.

Mabuchi I; Hosoya H Actin modulating proteins in the sea-urchin Anthocidaris crassispina egg 2. Sea-urchin egg profilin Biomed Res 3. 1982. 465-476.

Macpherson E Study of the diet of some fish in the western Mediterranean Misc Zool 5. 1979. 93-108. (Ophiuroidea)

Madsen F J A review of the Ophioleucinae (Echinodermata Ophiuroidea) with the erection of a new genus Ophiostriatus Steenstrupia 9. 1983. 29-69.

Maekawa K; Nanba T; Ishiwata N; Fushimi H Studies concerning the fishery biology of the sea-urchin Hemicentrotus pulcherrimus in Kaji Fukui Prefecture Japan 4. Stock size estimation by Delurys methods Jpn. Mer (Tokyo) 22. 1984. 15-22.

Maekawa S; Endo S; Sakai H A protein in starfish Asterias amurensis sperm head which bundles actin filaments in-vitro purification and characterization J Biochem 92. 1982. 1959-1972.

Magniez P Reproductive cycle of the brooding echinoid Abatus cordatus (Echinodermata) in Kerguelen Antarctic Ocean changes in the organ indices biochemical composition and caloric content of the gonads Mar Biol 74. 1983. 55-64.

Maes, P., J M Jangoux. 1984. The bald sea-urchin disease: a biopathological approach. Helgolander Meeresunters. 37, 217-224.

Makarcheva A M Sea-urchin Strongylocentrotus nudus resistance to high temperatures in embryonic and early larval developmental stages Biol Morya (2). 1983. 26-31.

Makarycheva A M Resistance of juvenile and sexually mature sea-urchins Strongylocentrotus nudus to high tempeature Biol Morya (1). 1983. 63-65.

Mal'tsev I I; Stonik V A; Kalinovksii A I Stichoposide E. A new triterpene glycoside from the holothurian family Stichopodidae. Khim Prir Soedin (3). 1983. 308-312.

Manukhin B N; Cham L N Adaptive change in cholinergic response of holothurian muscles J Evol Biochem Physiol 19. 1983. 21-25.

Manukhin B N; Lam Ngok Cham Adaptive changes of cholinergic reaction in holothurian muscles Zh Evol Biokhim Fiziol 19. 1983. 25-29.

Märkel K; Roeser U Calcite resorption in the spine of the echinoid Eucidaris tribuloides Zoomorphology 103. 1983. 43-58.

Märkel K; Roeser U The spine tissues in the echinoid Eucidaris tribuloides Zoomorphology 103. 1983. 25-42.

Markova L N; Volina E V; Kovachevich N Histochemical detection of biogenic monoamines in the developing embryos of sea-urchins Ontogenez 14. 1983. 634-638.

Marques V M Benthic populations of the Azores Portugal 1. Echinoderms Arq Mus Bocage Ser A 2. 1983. 1-7.

Martin K A; Miller O L Jr Polysome structure in sea-urchin Lytechinus pictus eggs and embryos an electron microscopic analysis Dev Biol 98. 1983. 338-348.

Martinage A; Belaiche D; Dupressoir T; Sautiere P Primary structure of histone H-2A from gonads of the star ish Asterias rubens Eur J Biochem 130. 1983. 465-472.

Martinez P; Palau J Antigenic variability among very lysine-rich histones from calf thymus and from sperm of different echinoderms Comp Biochem Physiol B Comp Biochem 74. 1983. 611-618.

Massin C; Sibuet M Discovery in the Deep Cape Basin of the Antarctic species Psychropotes scotiae (Echinodermata Holothuroidea) Bull Mus Natl Hist Nat Sect A Zool Biol Ecol Anim 5. 1983. 169-174.

Massin, C. 1984. Structures digestives d'holothuries Elasipoda (Echinodermata): Benthogone rosea Koehler, 1896 et Oneirophanta mutabilis Theel, 1879. Arch Biol. 95, 153-185.

Masuda, M, H Sato. 1984. Asynchronization of cell division is concurrently related with ciliogenesis in sea urchin blastulae. Develop Growth Differ. 26, 281-299. 294.

Masuda, M, H Sato. 1984. Reversible resorption of cilia and the centriole cycle in dividing cells of sea urchin blastulae. Zol Sci. z, 445-462.

Mauer, D. C. Epifanio, H. Dean, S. Howe, J. Vargas, A. Dittel, M. Murillo. 1984. Benthic invertebrates of a tropical estuary: Gulf of Nicoya, Costa Rica. J. Nat. Hist. 18, 47-61. (asteroids, echinoids, ophiuroids).

Matsuoka N; Ohnishi K-I; Takahashi T; Oka K-I; Hori S H Evidence for the homology of hexose 6 phosphate dehydrogenase EC-1.1.1.47 and glucose 6 phosphate dehydrogenase EC-1.1.1.49 comparison of the amino-acid compositions Comp Biochem Physiol B Comp Biochem 76. 1983. 811-816. (Echinoidea)

Matsoukas J; Moharir Y E; Findlay J A A convenient method for the isolation of free amino-acids from marine invertebrates J Nat Prod (Lloydia) 46. 1983. 582-585. (Asteroidea, Holothuroidea)

McCarthy R A; Spiegel M Serum effects on the in-vitro differentiation of sea-urchin Strongylocentrotus purpuratus micromeres Exp Cell Res 149. 1983. 433-442.

McCarthy R A; Spiegel M Protein composition of the hyaline layer of sea-urchin embryos and reaggregating cells Cell Differ 13. 1983. 93-102.

McCarthy R A; Spiegel M The enhancement of reaggregation of sea-urchin Arbacia-punctulata blastula cells by exogenous proteins Cell Differ 13. 1983. 103-114.

McClintock J B Escape response of Argopecten irradians (Mollusca Bivalvia) to Luidia clathrata and Echinaster sp (Echinodermata Asteroidea) Fla Sci 46. 1983. 95-100.

McClintock J B; Lawrence J M Ingestive conditioning in Luidia clathrata (Echinodermata Asteroidea) effect of nutritional condition on selectivity teloreception and rates of ingestion Mar Behav Physiol 10. 1984. 167-182.

McClintock J B M; Klinger T S; Lawrence J M Extraoral feeding in Luidia clathrata (Echinodermata Asteroidea) Bull Mar Sci 33. 1983. 171-172.

McClintock J B, T S Klinger, J M Lawrence. 1984. Chemoreception in Luidia clathrata (Echinodermata: Asteroidea): qualitative and quantitative aspects of a chemotactic responses to low molecular weight compounds. Mar Biol. 84, 47-52.

McGhee J D; Nickol J M; Felsenfeld G; Rau D C High order structure of chromatin orientation of nucleosomes within the 30 nanometer chromatin solenoid is independent of species and spacer length Cell 33. 1983. 831-842.

McGwin N F; Morton R W; Nishioka D Increased uptake of thymidine in the activation of sea-urchin Strongylocentrotus purpuratus eggs 2. Cooperativity with phosphorylation involvement of the cortex and partial localization of the kinases. Exp Cell Res 145. 1983. 115-126.

McIntosh G C Nuxocrinus new-genus and Pyrenocrinus new-genus 2 new Devonian cladid inadunate crinoid genera J Paleontol 57. 1983. 495-513.

Mebs D A toxin from the sea-urchin Tripneustes gratilla Toxicon 22. 1984. 306-307.

McNamara, K J 1984. Living Australian species of the echinoid Pericosmus (Spatangoida: Pericosmidae). Rec. West. Aust. Mus. 11, 87-100.

McNamara, K J, R A Henderson. 1984. A redescription of the rare echinoid Taimanawa mortensi (Henderson and Fell (Spatangoida: Brissidae). Rec West Aust Mus. 11, 403-410.

McLachlan, A., A.C. Cockcroft, D.E. Malan. 1984. Benthic faunal response to a high energy gradient. Mar. Ecol. Prog. Ser. 16, 51-63. (spatangoid, clypeasteroid)

McQuaid, C.D., G.M. Branch. 1984. Influence of sea temperature, substratum and wave exposure on rocky intertidal communities: an analysis of faunal and floral biomass. Mar. Ecol. Prog. Ser. 19, 145-151. (echinoid)

Meijer L; Dube F; Guerrier P Trifluoperazine sensitive step during sea-urchin Sphaerechinus granularis Echiuroid Urechis caupo and pelecypod Barnea candida egg activation Dev Growth Differ 25, 1983. 469-476.

Meijer L; Guerrier P Immobilized methylglyoxal bisguanyl hydrazone induces starfish oocyte maturation Dev Biol 100, 1983. 308-317.

Meijer L; Guerrier P Calmodulin in starfish oocytes 2. Trypsin treatment suppresses the trifluoperazine sensitive step Dev Biol 101. 1984. 257-262.

Menge B A Components of predation intensity in the low zone of the New England USA rocky intertidal region Oecologia 58. 1983. 141-155. (Asteroidea)

Messing C G Brooding and paedomorphosis in the deep water feather-star Comatilia iridometriformis (Echinodermata Crinoidea) Mar Biol 80.

Michel H B Culture of Lytechinus variegatus (Echinodermata Echinoidea) from egg to young adult Bull Mar Sci 34. 1984. 312-314.

Miller J E; Pawson D L Holothurians (Echinodermata Holothuroidea) Mem Hourglass Cruises 7 (1). 1984. 1-79.

Miller J E Systematics of the ophidiasterid sea-stars Copidaster lymani new-record and Hacelia superba new-record Echinodermata Asteroidea with a key to species of Ophidiasteridae from the Western Atlantic Proc Biol Soc Wash 97. 1984. 194-208.

Miller, J.M., and D.L. Pawson. 1984. Holothurians (Echinodermata: Holothuroidea) Memoirs of the Hourglass cruises. 7(1), 1-79

Miller, R.J. 1984. Sea urchin pathogen: a possible tool for biological control. Mar. Ecol. 21, 169-174.

Miller, R.J. 1985. Succession in sea urchin and seaweed abundance in Nova Scotia, Canada. Marine Biol. 84, 275-286.

Minale L; Pizza C; Zollo F; Riccio R Trace polyhydroxylated steroids from starfish Hacelia attenuata J Nat Prod (Lloydia) 46. 1983. 736-741.

Minale L; Pizza C; Riccio R; Zollo F Starfish saponins 9. A novel 24-O glycosidated steroid from the starfish Hacelia attenuata Experientia 39. 1983. 567-569.

Minale L; Pizza C; Riccio R; Zollo F Starfish saponins 10. Further 24-O glycosidated steroids from the starfish Hacelia attenuata Experientia 39. 1983. 569-571.

Mironov A N Accumulation effect in distribution of sea-urchins Zool Zh 62. 1983. 1202-1208.

Mita I; Obata C Timing of early morphogenetic events in tetraploid starfish Asterina pectinifera embryos J Exp Zool 229. 1984. 215-222.

Mita M Activation of respiration in sea-urchin Hemicentrotus pulcherrimus spermatozoa by calcium ionophore A-23187 calcimycin Comp Biochem Physiol A Comp Physiol 77. 1984. 689-692.

Mita M; Yasumasu I Metabolism of lipid and carbohydrate in sea-urchin Hemicentrotus pulcherrimus spermatozoa Gamete Res 7. 1983. 133-144.

Mita M; Yasumasu I Regulation of the tricarboxylic-acid cycle in sea-urchin Anthocidaris crassispina eggs and embryos J Exp Zool 228. 1983. 71-78.

Mita M; Yasumasu I Effect of sodium-free sea water on energy metabolism in sea-urchin Hemicentrotus pulcherrimus spermatozoa with special reference to coenzyme A and carnitine derivatives Gamete Res 7. 1983. 259-268.

Mita, M., A. Hino, I Yasumasu. 1984. Effect of temperature on interaction between eggs and spermatozoa of sea urchins. Biol. Bull. 166, 68-77.

Mitsunaga K; Fujiwara A; Yoshimi T; Yasumasu I Stage specific effects on sea-urchin embryogenesis of zinc lithium several inhibitors of cyclic AMP phosphodiesterase and inhibitors of protein synthesis Dev Growth Differ 25. 1983. 249-260.

Miyachi, Y, M Iwata, H Sato, E Nakano. 1984. Effect of fibronectin on cultured cells derived from isolated micromeres of the sea urchin Hemicentrotus pulcherrimus. Zool Sci. 1, 265-271.

Mizoguchi H; Yasumasu I Inhibition of archenteron formation by the inhibitors of prolylhydroxylase in sea-urchin Hemicentrotus pulcherrimus embryos Cell Differ 12. 1983. 225-232.

Mizoguchi H; Yasumasu I Exogut formation by the treatment of sea-urchin Hemicentrotus-pulcherrimus embryos with ascorbate and alpha ketoglutarate Dev Growth Differ 24. 1982. 359-368.

Mizoguchi H; Fujiwara A; Yasumasu I Degeneration of archenteron in sea-urchin embryos caused by A A' dipyridyl Differentiation 25. 1983. 106-112.

Mizoguchi H; Yasumasu I Effect of alpha alpha' dipyridyl on exogut formation in vegetalized embryos of the sea-urchin Hemicentrotus pulcherrimus Dev Growth Differ 25. 1983. 57-64.

Mladenov P V Breeding patterns of three species of Caribbean brittle stars (Echinodermata Ophiuroidea) Bull Mar Sci 33. 1983. 363-372.

Mladenov P V Rate of arm regeneration and potential causes of arm loss in the feather-star Florometra serratissima (Echinodermata Crinoidea) Can J Zool 61. 1983. 2873-2879.

Mladenov P V; Emson R H; Colpit L V; Wilkie I C Asexual reproduction in the West-Indian brittle star Ophiocomella ophiactoides (Echinodermata Ophiuroidea) J Exp Mar Biol Ecol 72. 1983. 1-24.

Monteiro M-V Echinoderms from the Sado Estuary Setubal western Portugal Tethys 10. 1982. 379-381.

Moody W J; Lansman J B Developmental regulation of calcium and potassium currents during hormone induced maturation of starfish Leptasterias hexactis oocytes Proc Natl Acad Sci U S A 80. 1983. 3096-3100.

Moon R T; Nicosia R F; Olsen C; Hille M B; Jeffrey W R The cytoskeletal framework of sea-urchin eggs and embryos developmental changes in the association of messenger RNA Dev Biol 95. 1983. 447-458.

Moore D S; Miller R J Recovery of macroalgae following widespread sea-urchin Strongylocentrotus droebachiensis mortality with a description of the nearshore hard bottom habitat on the Atlantic coast of Nova Scotia Canada Can Tech Rep Fish Aquat Sci (1230). 1983. 1-94.

Moore E J Middle Tertiary molluscan zones of the Pacific Northwest J Paleontol 58. 1984. 718-737. (Echinoidea)

Moreno C A; Jara H F Ecological studies on fish fauna associated with Macrocystis-pyrifera belts in the south of Fueguian Islands Chile Mar Ecol Prog Ser 15. 1984. 99-108. (Echinoidea)

Morioka M; Shimada H Synthesis of diadenosine 5' 5'''-P-1 P-4 tetraphosphate in sea-urchin Hemicentrotus pulcherrimus embryos Cell Differ 14. 1984. 53-58.

Mornet R; Leonard N J; Theiler J B; Doree M Specificity of the 1 methyl adenine receptors in starfish Asterias rubens oocytes synthesis and properties of some 1 8 disubstituted adenines 1 6 dimethyl-1H purine and of the 1 azidobenzyl adenines J Chem Soc Perkin Trans I (5). 1984. 879-886.

Morris G F; Marzluff W F A factor in sea-urchin eggs inhibits transcription in isolated nuclei by sea-urchin RNA polymerase III Biochemistry 22. 1983. 645-653.

Mostler H Sclerites of holothurians of the Paleozoic genus Microantyx Ber Naturwiss-med Ver Innsb 70. 1983. 35-44.

Moskvin M M Pseudogibbaster new-genus of Danian and Paleocene sea-urchins Paleontol Zh (3). 1983. 112-116.

Moskvin M M New Late Cretaceous and Paleocene sea-urchins from the family Palaeostomatidae Paleontol Zh (3). 1982. 101-107.

Motokawa T The viscosity change of the body wall dermis of the sea-cucumber Stichopus japonicus caused by mechanical and chemical stimulation Comp Biochem Physiol A Comp Physiol 77. 1984. 419-424.

Motokawa T Viscoelasticity of holothurian body wall J Exp Biol 109. 1984. 63-76.

Motokawa, T. 1984. The viscosity change of the body wall dermis of the sea cucumber Stichopus japonicus caused by mechanical and chemical stimulation. Comp. Biochem. Physiol. 77A, 419-424.

Motokawa, T. 1984. Connective tissue catch in echinoderms. Biol. Rev. 59, 255-270.

Mourelle M; Vargas I; Darszon A Adenylate cyclase activity of membrane fractions isolated from sea-urchin Lytechinus pictus sperm Gamete Res 9. 1984. 87-98.

Moy G W; Kopf G S; Gache C; Vacquier V D Calcium mediated release of glucanase activity from cortical granules of sea-urchin Strongylocentrotus purpuratus eggs Dev Biol 100. 1983. 267-274.

Nagano H; Okano K; Ikegami S Mitochondrial DNA synthesis in over matured eggs of the starfish Exp Cell Res 146. 1983. 207-211.

Nagata M Bioenergetics of the benthic herbivorous populations in a rocky intertidal habitat Bull Jpn Soc Sci Fish 49. 1983. 33-40. (Echinoidea)

Naidenko V P; Levin V S Experience in the rearing of the sea-cucumber Cucumaria-japonica in the laboratory Biol Morya (9). 1983. 61-65.

Naidenko T Kh; Dzyuba S M Growth and maturation of the sea-urchin Strongylocentrotus intermedius in laboratory conditions Sov J Mar Biol 8. 1982. 197-202.

Naidenko T Kh; Dzyuba S M Growth and maturation of the sea-urchin Strongylocentrotus intermedius under laboratory conditions Biol Morya (4). 1982. 20-24.

Naidenko T Kh Laboratory cultivation of the sea-urchin Strongylocentrotus intermedius Biol Morya (1). 1983. 51-55.

Nakano E; Hino A; Furuse K Effects of surfactants on the fertilizing capacity and acrosome reaction of sea-urchin Hemicentrotus pulcherrimus spermatozoa Gamete Res 9. 1984. 115-125.

Navea-A E; Miranda-B O Calcium carbonate in mollusks and echinoderms of Antofagasta Chile Rev Biol Mar 18. 1982. 117-128.

Neira C; Hoeneisen M; Silva M; Sammes P G Marine organic chemistry 3. Isolation of 3-beta 6-alpha dihydroxy-5-alpha cholest-9 11-en-23-one from the starfish Stichaster striatus J Nat Prod (Lloydia) 47. 1984. 182-183.

Nedelec, H, M Verlaque, S Dallot. 1983. Note preliminaire sur les fluctuations de l'activite trophique de Paracentrotus lividus dans l'herbier de posidonies. Rapp Comm Int Mer Medit. 28, 153-155.

Nedelec, H. 1983. Sur un nouvel indice de replection pour les oursins reguliers. Rapp Comm Int Mer Medit. 28, 149-151.

Nemer M; Travaglini E C; Rondinelli E; D'Alonzo J Developmental regulation induction and embryonic tissue specificity of sea-urchin Strongylocentrotus purpuratus metallo thionein gene expression Dev Biol 102. 1984. 471-482.

Nemoto S-I Nature of the 1 methyladenine requiring phase in maturation of starfish Asterina pectinifera oocytes Dev Growth Differ 24. 1982. 429-442.

Nemoto S-I; Ishida K Changes in cyclic GMP levels on meiosis reinitiation of starfish Asterias amurensis oocytes. Exp Cell Res 145. 1983. 226-230.

Nichols D; Barker M F Reproductive and nutritional periodicities in the starfish Marthasterias glacialis from Plymouth Sound UK J Mar Biol Assoc U K 64. 1984. 461-470.

Nichols D; Barker M F A comparative study of reproductive and nutritional periodicities in two populations of Asterias rubens (Echinodermata Asteroidea) from the English Channel J Mar Biol Assoc U K 64. 1984. 471-484.

Nicotra A; Arizzi M Mitochondrial ultrastructural transformations in Paracentrotus lividus eggs stimulated by ammonia Exp Cell Res 146. 1983. 230-233.

Nigata, M. 1983. Bioenergetics of the benthic herbivorous populations in a rocky intertidal habitat. Bull Jpn Soc Sci Fish. 49, 33-40.

Niman H L; Hough-evans B R; Vacquier V D; Britten R J; Lerner R A; Davidson E H Proteins of the sea-urchin Strongylocentrotus purpuratus egg Dev Biol 102. 1984. 390-401.

Nishioka D; Killian C E; Chacon C T; Sgagias M K Increased uptake of thymidine in the activation of sea-urchin Strongylocentrotus purpuratus eggs 3. Effects of aphidicolin J Cell Physiol 118. 1984. 27-33.

Nojima S Ecological studies of the sea-star Astropecten latespinosus 5. Pattern of spatial distribution and seasonal migration with special reference to spawning aggregation Publ Amakusa Mar Biol Lab Kyushu Univ 7. 1983. 1-16.

Nomura K; Suzuki N; Ohtake H; Isaka S Structure and action of sperm activating peptides from the egg jelly of a sea-urchin Anthocidaris crassispina Biochem Biophys Res Commun 117. 1983. 147-153.

Nuccitelli R; Grey R D Controversy over the fast partial temporary block to polyspermy in sea-urchins a reevaluation Dev Biol 103. 1984. 1-17.

O'Clair, C E, S D Rice. 1985. Depression of feeding and growth rates of the seastar Evasterias troschelii during long-term exposure to the water-soluble fraction of crude oil. Mar Biol. 84, 331-340.

O'Connor B; Bowmer T; Grehan A Long-term assessmen of the population dynamics of Amphiura filiformais (Echinodermata Ophiuroidea) in Galway Bay west coast of Ireland Mar Biol 75. 1983. 279-286.

Oguro C Supplementary notes on the sea-stars from the Palau and Yap Islands 1 Annot Zool Jpn 56. 1983. 221-226.

Oguro, C, Y Sasayama. 1984. Occurrence of Fromia nodosa A.M. Clark (Asteroidea, Ophidiasteridae) from the Marshall Islands, the western Pacific. Proc. Jap Soc Syst Zool. (27), 101-106.

Ohtake H; Suyemitsu M; Koga M Sea-urchin Anthocidaris crassispina egg zinc binding protein cellular localization purification and characterization Biochem J 211. 1983. 109-118.

Okada, Y., K.S. Iwata, M. Yanagihara. 1984. Synchronized rhythmic contractions among five gonadal lobes in the shedding sea urchins: coordinative function of the aboral nerve ring. Biol. Bull. 166, 228-236

Oishi N; Shimada H Intracellular localization of DNA polymerases in the oocyte of the starfish Asterina pectinifera Dev Growth Differ 25. 1983. 547-552.

Oishi N; Shimada H Purification and properties of a DNA ligase Ec-6.5.1.1 from sea-urchin Hemicentrotus pulcherrimus embryos J Biochem (Tokyo) 95. 1984. 1187-1192.

Ojeda F P; Santelices B Invertebrate communities in holdfasts of the kelp Macrocystis pyrifera from southern Chile Mar Ecol Prog Ser 16. 1984. 65-74. (Asteroidea)

Okabayashi K; Nakano E The cytochrome system of sea-urchin Hemicentrotus pulcherrimus eggs and embryos Arch Biochem Biophys 225. 1983. 271-278.

Oleinikova G K; Kuznetsova T A; Ivanova N S; Kalinovskii A I; Rovnykh N V; Elyakov G B Glycosides from marine invertebrates 15. The new tri terpenic glycoside holothurin A-1 from Caribbean Sea-cucumber of the family Holothurioidae Khim Prir Soedin (Tashk) (4). 1982. 464-469.

O'Melia A F The effects of chemical animalizing and vegetalizing agents and of cell dissociation on the synthesis of 5S RNA and transfer RNA in cleaving sea-urchin Arbacia punctulata embryos Dev Growth Differ 26. 1984. 73-80.

O'Melia A F Ribosomal RNA synthesis in sea-urchin embryos differential rates of accumulation in chemically induced animalized and vegetalized larvae Dev Growth Differ 25. 1983. 171-180.

Omoto C K; Brokaw C J Structure and behavior of the sperm terminal filament J Cell Sci 58. 1982. 385-410. (Echinoidea)

O'Neill S M; Sutterlin A M; Aggett D The effects of size selective feeding by starfish Asterias vulgaris on the production of mussels Mytilus edulis cultured on nets Aquaculture 35. 1983. 211-220.

Oshima N Mechanical properties of perivitelline fibers of sea-urchin eggs as studied by application of centrifugal and electrophoretic forces Biol Bull 164. 1983. 483-492.

Otto J J; Schroeder T E Assembly disassembly of action bundles in starfish Pisaster ochraceus oocytes an analysis of actin associated proteins in the isolated cortex Dev Biol 101. 1984. 263-273.

Otto J J; Schroeder T E Microtubule arrays in the cortex and near the germinal vesicle of immature starfish Pisaster ochraceus oocytes Dev Biol 101. 1984. 274-281.

Oudejans R C H M; De Ruyter A; Van Der Plas A J; Voogt P A Fate of ingested leucine and glucose in the sea-star Asterias rubens during its annual reproductive cycle Comp Biochem Physiol B Comp Biochem 76. 1983. 591-598.

Pagano G; Esposito A; Giordano G G; Vamvakinos E; Quinto I; Bronzetti G; Bauer C; Corsi C; Nieri R; Ciajolo A Genotoxicity and teratogenicity of diphenyl and diphenyl ether a study of sea-urchins yeast Saccharomyces cervisiae and Salmonella Typhimurium Teratog Carcinog Mutagen 3. 1983. 377-393.

Pagano G; Esposito A; Bove P; De Angelis M; Rota A; Giordano G G The effects of hex valent and trivalent chromium on fertilization and development in sea-urchins Environ Res 30. 1983. 442-452.

Palsson O K The feeding habits of demersal fish species in Icelandic waters Rit Fiskideildar 7. 1983. 1-60. (Ophiuroidea)

Padgett, R M. Some observations upon the distribution of strontium in four species of ophiuroids - Ophiocomina nigra (Abildgaard), Ophiura albida (Forbes), Ophiothrix suensoni (Lütken) and Ophioderma cinereum (Müller and Troschel). J Mar Biol Ass U K. 65. 1985. 293-304.

Passananti C; Felsani A; Giordano R; Metafora S; Spadafora C Cloning and characterization of the ribosomal genes of the sea-urchin Paracentrotus lividus heterogeneity of the multi gene family Eur J Biochem 137. 1983. 233-240.

Paul, C R C, A B Smith. 1984. The early radiation and phylogeny of echinoderms. Biol. Rev. 59, 443-481.

Paweletz N; Mazia D; Finze E-M The centrosome cycle in the mitotic cycle of sea-urchin Strongylocentrotus purpuratus eggs Exp Cell Res 152. 1984. 47-65.

Pawson D L; Miller J E Systematics and ecology of the sea-urchin genus Centrostephanus Echinodermata Echinoidea from the Atlantic and eastern Pacific Oceans Smithson Contrib Mar Sci (20). 1983. 1-15.

Pawson D L Ocnus sacculus new-species (Echonodermata Holothuroidea) A brood protecting holothurian from southeastern New Zealand N Z J Mar Freshwater Res 17. 1983. 227-230.

Parnes A Biostratigraphy of the Mahmal Formation Middle and Upper Bajocian in Makhtesh Ramon Negev southern Israel Geol Surv Isr Bull (74). 1981. 1-55. (Echinoidea)

Parness J; Asnes C F; Horwitz S B Taxol binds differentially to flagellar outer doublets and their reassembled microtubules Cell Motil 3. 1983. 123-130.

Payan P; Girard J-P; Clapa B Mechanisms regulating intracellular pH in sea-urchin Paracentrotus lividus eggs Dev Biol 100 (1). 1983. 29-38.

Pearson, M., J.D. Gage. 1984. Diets of some deep-sea brittle stars in the Rockall Trough. Mar. Biol. 82,247-258.

Penchaszadeh P E; Molinet R Diet of the sea-star Tethyaster vestitus (Astropectinidae) in the Golfo-Triste Venezuela Bull Mar Sci 33. 1983. 187-191.

Penchaszadeh P E; Lera M E Diet of three tropical Luidia spp (Echinodermata Asteroidea) in Golfo Triste Venezuela Caribb J Sci 19. 1983. 1-6.

Penney A J; Griffiths C L Prey selection and the impact of the starfish Marthasterias glacialis and other predators on the mussel Choromytilus meridionalis J Exp Mar Biol Ecol 75. 1984. 19-36.

Peters R; Sardet C; Richter H-P Mobility of membrane lipids and proteins at the animal and vegetal pole of the sea-urchin Paracentrotus lividus egg Dev Growth Differ 26. 1984. 105-110.

Peters N K; Kleinsmith L J Kinetic model for the study of gene expression in the developing sea-urchin Strongylocentrotus purpuratus Dev Biol 102. 1984. 433-437.

Philip G M A Pleistocene occurrence of the cidaroid echinoid genus Phyllacanthus in New-Zealand N Z J Geol Geophys 25. 1982. 363-366.

Picard A; Doree M Intracellular microinjection of alkaline buffers reversibly inhibits the initial phase of hormone action in meiosis reinitiation of starfish Marthasterias glacialis oocytes Dev Biol 97. 1983. 184-190.

Picard A; Doree M Lithium inhibits amplification of action of the maturation promoting factor in meiotic maturation of starfish oocytes Exp Cell Res 147. 1983. 41-50.

Picard A; Doree M Is calcium the 2nd messenger of 1 methyladenine in meiosis reinitiation of starfish Marthasterias glacialis oocytes? Exp Cell Res 145. 1983. 325-338.

Picard A; Doree M Hormone induced parthenogenetic activation of mature starfish oocytes Exp Cell Res 145. 1983. 315-324.

Pinto L Gut content and food consumption of some echinoderms at Talin Bay Batangas Philippines Kalikasan 11. 1982. 302-308.

Piotrowski A Structure of teeth of the class Ophiocistioidea Bull Acad Pol Sci Ser Sci Biol 29. 1981. 451-456.

Piperno G Monoclonal antibodies to dynein subunits reveal the existence of cytoplasmic antigens in sea-urchin Strongylocentrotus purpuratus egg J Cell Biol 98. 1984. 1842-1850.

Podgornaya O I; Drozdov A L; Guseva A I; Pinaev G P Role of actin in spontaneous gelatinization of sarcoplasmic proteins in ambulacrum of the sea-star Asterias amurensis Biofizika 38. 1983. 599-605.

Pohle G; Telford M The larval development of Dissodactylus primitivus Brachyura Pinnotheridae reared in the laboratory Bull Mar Sci 33. 1983. 257-273. (Echinoidea)

Popov A M; Kalinovskaya N I; Kuznetsova T A; Agafonova I G; Anisimov M M Role of sterols in the membranotropic activity of triterpene glycosides Antibiotiki 28. 1983. 656-659. (Holothuroidea)

Poretskaya E S Polydiadema Echinoidea from the Lower Valanginian of Mangyshlak Kazakh-SSR USSR Paleontol Zh (3). 1983. 116-119.

Posakony J W; Flytzanis C N; Britten R J; Davidson E H Interspersed sequence organization and developmental representation of cloned polyadenylated RNA from sea-urchin eggs J Mol Biol 167. 1983. 361-390.

Pospelov V A; Svetlikova S B Super nucleosomal levels of chromatin structure the nucleodisome Mol Biol 16. 1982. 821-827. (Echinoidea)

Presnov E V; Isaeva V V Rearrangements of the cleavage spatial organization in temporarily flattened sea-urchin Strongylocentrotus nudus zygotes Ontogenez 14. 1983. 319-323.

Prick R Inadunate crinoids from the Middle Devonian of the Eifel West Germany Senckenb lethaea 64. 1983. 227-236.

Principato G B; Rosi G; Giovannini E; Bocchini V Propionyl cholinesterase from Helix pomatia and acetyl cholinesterase from Asterias bispinosa A kinetic comparative study Comp Biochem Physiol B Comp Biochem 77. 1984. 211-220.

Propp M V; Ryabushko V I; Zhuchikhina A A; Propp L N Seasonal changes in respiration ammonia and phosphate excretion and activity of carbohydrate metabolism enzymes in 4 echinoderm species from the Sea of Japan Comp Biochem Physiol B Comp Biochem 75. 1983. 707-712.

Pudovkin, A I, G P Manchenco. 1984. Allozyme variation in seven species of sea-stars from Peter the Great Bay, Sea of Japan. Genetica. 20, 1633-1643.

Pudovkin, A I, O L Serov, V I Glazko. 1984. Allozyme variation in four echinoids from Peter the Great Bay of the Sea of Japan. Genetica. 20, 1139-1147.

Qin Q; Chen J; Wu Y; Fan H Desulphated acidic mucopolysaccharide from Stichopus japonicus. J Mar D ugs China. 5. 1983. 18-22.

Radany E W; Gerzer R; Garbers D L Purification and characterization of particulate guanylate cyclase from sea-urchin Strongylocentrotus purpuratus spermatozoa J Biol Chem 258. 1983. 8346-8351.

Rakov V A Growth rates and duration of life in the sea-cucumber Stichopus japonicus in the Possiet Bay Sea of Japan Biol Morya (4). 1982. 52-54.

Ramm E I; Zalenskaya I A; Zalenskii A O; Vorob'ev V I Investigation of reconstitution and association processes of nucleosomes with various histone contents Biofizika 28. 1983. 698-699.

Rappaport R Cytokinesis furrowing activity in nucleated endoplasmic fragments of fertilized sand-dollar Echinarachnius parma eggs, J Exp Zool 227. 1983. 247-254.

Rappaport R; Rappaport B Cytokinesis effects of blocks between the mitotic apparatus and the surface on furrow establishment in flattened echinoderm eggs J Exp Zool 227. 1983. 213-228.

Rassoulzadegan F; Fenaux L; Strathmann R R Effect of flavor and size on selection of food by suspension feeding plutei Limnol Oceanogr 29. 1984. 357-361.

Regis M-B; Thomassin B A The ecology of regular echinoids in coral reefs of the tulear region southwest Malagasy morphological adaptations of the spine microstructure Ann Inst Oceanogr 58. 1982. 117-158.

Regis M B; Thomassin B A Structural anomalies in the spines of Heterocentrotus mammillatus (Echinodermata Echinoidea) in an in-vitro microcosm Mar Biol 75. 1983. 89-98.

Renaud F; Parisi E; Capasso A; De Prisco P On the role of serotonin and 5 methoxytryptamine in the regulation of cell division in sea-urchin eggs Dev Biol 98. 1983. 37-46.

Repaske D R; Garbers D L A hydrogen ion flux mediates stimulation of respiratory activity by speract in sea-urchin Strongylocentrotus purpuratus spermatozoa J Biol Chem 258. 1983. 6025-6029.

Ribot H; Decker S J; Kinsey W H Preparation of plasma membranes from fertilized sea-urchin eggs Dev Biol 97. 1983. 494-499.

Ribot H D Jr; Eisenman E A; Kinsey W H Fertilization results in increased tyrosine phosphorylation of egg proteins J Biol Chem 259. 1984. 5333-5338. (Echinoidea)

Richards R G; Shaw B R Temporal changes in nucleosome populations during sea-urchin Strongylocentrotus purpuratus early development Biochemistry 23. 1984. 2095-2102.

Roberts J W; Grula J W; Posakony J W; Hudspeth R; Davidson E H; Britten R J Comparison of sea-urchin and human mitochondrial DNA evolutionary rearrangement Proc Natl Acad Sci U S A 80. 1983. 4614-4618.

Roberts M S; Terwilliger R C; Terwilliger N B Comparison of sea-cucumber hemoglobin structures Comp Biochem Physiol B Comp Biochem 77. 1984. 237-244.

Roberts S B; Weisser K E; Childs G Sequence comparisons of nonallelic late histone genes and their early stage counterparts evidence for gene conversion within the sea-urchin Lytechinus pictus late stage gene family J Mol Biol 174. 1984. 647-662.

Roccheri M C; Sconzo G; Di Carlo M; Di Bernardo M G; Pirrone A; Gambino R; Giudice G Heat shock proteins in sea-urchin embryos transcriptional and post transcriptional regulation Differentiation 22. 1982. 175-178.

Roman J Marsupiate echinoids (family Temnopleuridae) from the western European Neogene Ann Paleontol Vertebr-Invertebr 69. 1983. 13-42.

Roman J; Sornay J Ammonites inocerams and echinoids from the Upper Cretaceous of Paki Senegal Bull Mus Natl Hist Nat Sect C Sci Terre Paleontol Geol Mineral 5. 1983. 3-23.

Romashina N A Marine invertebrates as a source of eicosapentaenoic-acid and other polyenoic-acids Biol Morya (1). 1983. 66-68.

Rossignol D Pl Scher M; Waechter C J; Lennarz W J Metabolic interconversion of dolichol and dolichyl phosphate during development of the sea-urchin Strongylocentrotus purpuratus embryo J Biol Chem 258. 1983. 9122-9127.

Rossignol D P; Decker G L; Lennarz W J; Tsong T Y; Teissie J Induction of calcium dependent localized cortical granule breakdown in sea-urchin Strongylocentrotus purpuratus eggs by voltage pulsation Biochim Biophys Acta 763. 1983. 346-355.

Rowe, F W E. 1983. A collection of holothurians in the Leiden Museum from the East Indies and New Guinea, with the description of a new species of Protankyra (Holothurioidea: Synaptidae) from Java. Zool. Mededel. 57, 149-164.

Rowe, F W E, L Vail. 1984. Crown-of-thorns: GBR not under threat. Search. 15, 211-213.

Rylaarsdam K W Life Histories and abundance patterns of colonial corals on Jamaican West-Indies reefs Mar Ecol Prog Ser 13. 1983. 249-260. (echinoidea).

Rusakov Yu I; Bondareva V M Immunological properties of insulins and insulin-like substances from vertebrates and invertebrates Zh Evol Biokhim Fiziol 19. 1983. 133-137. (Asteroidea)

Sadokova I E Effect of neuropharmacological agents on the content of cyclic nucleotides in the early embryos of sea-urchins Strongylocentrotus intermedius Ontogenez 13. 1982. 630-633.

Sadokova I E The effect of indocarb and colchicine on the content of cyclic nucleotides in the early sea-urchin Strongylocentrotus intermedius embryos Ontogenez 14. 1983. 525-530.

Saita A; Carnevali M D C; Canonaco M Muscle system organization in the echinoderms 1. Intervertebral muscles of Ophioderma longicaudum (Ophiuroidea) J Submicrosc Cytol 14. 291-304.

Saito K; Miyamoto T Ecological studies on sea-urchins Strongylocentrotus intermedius and Strongylocentrotus nudus in an artificial channel of tidal rock flat Sci Rep Hokkaido Fish Exp Stn (25). 1983. 21-34.

Salmon E D Mitotic spindles isolated from sea-urchin eggs with ethylene glycol bis-beta aminoethyl ether N N N' N' tetraacetic-acid lysis buffers Wilson. L. (Ed.) Methods in cell biology, vol. 25. Academic Press, N.Y., 1982. 69-106.

Sano K; Kanatani H Effects of various protease inhibitors on starfish oocyte maturation Biomed Res 4. 1983. 139-146.

Sandor M Lower Badenian Crinoidea find from the Borzsony Mountains Northern Hungary Foldt kozl 113. 1983. 171-174.

Santelices B; Correa J; Avila M Benthic algal spores surviving digestion by sea-urchins Tetrapygus niger J Exp Mar Biol Ecol 70. 1983. 263-270.

Santella L; Monroy A; Rosati F Differentiation of egg envelopes 1. The starfish Astropecten aurantiacus Dev Biol 99. 1983. 473-481.

Sasaki H Modulation of calcium sensitivity by a specific cortical protein during sea-urchin egg co tical vesicle exocytosis Dev Biol 101. 1984. 125-135.

Sasaki H; Epel D Cortical vesicle exocytosis in isolated cortices of sea-urchin Strongylocentrotus-purpuratus eggs description of a turbidometric assay and its utilization in studying effects of different media on discharge Dev Biol 98. 1983. 327-337.

Schatt P; Moreau M; Guerrier P Cyclic changes in protein phosphorylation and MPF activity during early cleavage in the sea-urchin Sphaerechinus granularis egg C R Seances Acad Sci Ser III Sci Vie 296. 1983. 551-554.

Schatten G; Schatten H Fertilization and early development of sea-urchins Scanning electron microsc 1983. 1983. 1043-1414.

Schatten G; Hulser D Timing the early events during sea-urchin Lytechinus variegatus fertilization Dev Biol 100. 1983. 244-248.

Scheibling, R.E. 1984. Echinoids, epizootics and ecological stability in the rocky subtidal off Nova Scotia, Canada. Helgolander Meersunters. 37, 233-242.

Scheibling, R.E. 1984. Predation by rock crabs (Cancer irroratus) on diseased sea urchins (Strongylocentrotus droebachiensis) in Nova Scotia. Can J Fish Aquat Sci. 41, 1847-1851.

Scheibling R E; Stephenson R L Mass mortality of Strongylocentrotus droebachiensis (Echinodermata Echinoidea) off Nova-Scotia Canada Mar Biol 78. 1984. 153-164.

Schuel, H. 1984. The prevention of polyspermic fertilization in sea urchins. Biol. Bull. 167-271-309.

Schumacher G A; Ausich W I New Upper Ordovician echinoderm site Bull Fork Formation Caesar Creek Reservoir Warren County Ohio USA Ohio J Sci 83. 1983. 60-64.

Schmidt T; Epel D High hydrostatic pressure and the dissection of fertilization responses 1. The relationship between cortical granule exocytosis and proton efflux during fertilization of the sea-urchin Strongylocentrotus purpuratus egg Exp Cell Res 146. 1983. 235-248.

Sconzo G; Roccheri M C; Di Carlo M; Di Bernardo M G; Giudice G Synthesis of heat shock proteins in dissociated sea-urchin embryonic cells Cell Differ 12. 1983. 317-320.

Schroeder T E; Christian R Polymerization of actin without acrosomal exocytosis in starfish Pisaster ochraceus sperm visualization with 7 nitrobenz-2-oxo-1 3-diazole phallacidin Exp Cell Res 140. 1982. 363-372.

Schroeder T E; Otto J J Cyclic assembly disassembly of cortical microtubules during maturation and early development of starfish Pisaster ochraceus oocytes Dev Biol 103. 1984. 493-503.

Schroeder T E; Stricker S A Morphological changes during maturation of starfish Pisaster ochraceus oocytes surface ultrastructure and cortical actin Dev Biol 98. 1983. 373-384.

Schuler M A; McCosker P; Keller E B DNA sequence of two linked actin genes of sea-urchin Strongylocentrotus purpuratus Mol Cell Biol 3. 1983. 448-456.

Sebens K P The larval and juvenile ecology of the temperate octocoral alcyonium-siderium 2. Fecundity survival and juvenile growth J Exp Mar Biol Ecol 72. 1983. 263-286. (echinoidea)

Schneider J; Torunski H Biokarst on limestone coasts morphogenesis and sediment production Mar Ecol (Pubbl Stn Zool Napoli I) 4. 1983. 45-64. (Echinoidea).

Service, M., A.C. Wardlaw. 1985. Bactericidal activity of coelomic fluid of the sea urchin, Echinus esculentus, on different marine bacteria. J. Mar. Biol. Ass. U.K. 65, 133-140.

Shchipakin V N; Evtodienko Y V Glycolytic intermediate levels in the cell cycle of sea-urchin Strongylocentrotus nudus eggs and bacteria Comp Biochem Physiol B Comp Biochem 77. 1984. 245-248.

Shen, S S; Steinhardt R A Time and voltage windows for reversing the electrical block to fertilization Proc Natl Acad Sci U S A 81. 1984. 1436-1439.

Shepherd G W; Rondinelli E; Nemer M Differences in abundance of individual RNA species in normal and animalized sea-urchin Strongylocentrotus purpuratus embryos Dev Biol 96. 1983. 520-528.

Shigei M A new fibulariid sea-urchin Fibularia japonica new-species from Japanese waters Publ Seto Mar Biol Lab 27. 1982. 11-16.

Shioda M; Nagano H Localization of DNA polymerase alpha on the nuclear membrane in sea-urchin Hemicentrotus pulcherrimus embryos Exp Cell Res 146. 1983. 349-360.

Shimada H Effect of inhibition of protein synthesis of DNA synthesis in sea-urchin Anthocidaris crassispina embryos at early cleavage stage J Fac Sci Univ Tokyo Sect IV Zool 15. 1982. 141-150.

Shimada H; Haraguchi T; Nagano H; Fujiwara A; Yasumasu I Inhibition of DNA polymerases of sea-urchin Hemicentrotus pulcherrimus by palmitoyl coenzyme a Biochem Biophys Res Commun 110. 1983. 902-907.

Shimada H Cellular factor stimulating DNA synthesis in nuclei isolated from sea-urchin Hemicentrotus pulcherrimus embryos Dev Biol 97. 1983. 454-459.

Shinagawa A; Shiomi K; Yamanaka H; Kikuchi T Selective determination of inorganic arsenic III arsenic V and organic arsenic in marine organisms Bull Jpn Soc Sci Fish 49. 1983. 75-78. (Echinoidea, Holothuroide).

Shingyoji C; Takahashi K Iontophoresis of ATP determination of transport number by bioassay with demembranated flagella J Fac Sci Univ Tokyo Sect IV Zool 15. 1982. 213-226.

Shinn G L Anoplodium hymanae new-species an unagillid turbellarian from the coelom of Stichopus californicus a northeast pacific holothurian Can J Zool 61. 1983. 750-760.

Shinn G L The life history of Syndisyrinx franciscanus a symbiotic turbellarian from the intestine of echinoids with observations on the mechanism of hatching Ophelia 22. 1983. 57-80.

Shiomi K; Shinagawa A; Azuma M; Yamanaka H; Kikuchi T Pur fication and comparison of water soluble arsenic compounds in a flatfish Limanda herzensteini sea-squirt Halocynthia roretzi and sea-cucumber Stichopus japonicus Comp Biochem Physiol C Comp Pharmacol 74. 1983. 393-396.

Shirai H; Ikegami S; Kanatani H; Mohri H Regulation of sperm motility in starfish Asterina pectinifera 1. Initiation of movement Dev Growth Differ 24. 1982. 419-428.

Shott R J; Lee J J; Britten R J; Davidson E H Differential expression of the actin gene family of Strongylocentrotus purpuratus Dev Biol 101. 1984. 295-306.

Silver R B; Staft M S; Taylor A R; Cole R D Identification of nonmitochondrial creatine kinase EC-2.7.3.2 enzymatic activity in isolated sea-urchin Strongylocentrotus purpuratus mitotic apparatus J Biol Chem 258. 1983. 13287-13291.

Schwager S L U; Brandt W F; Von Holt C The isolation of isohistones by preparative gel electrophoresis from embryos of the sea-urchin Parechinus angulosus Biochim Biophys Acta 741. 1983. 315-321.

Shen W et al Observation of retention time and excretion of 131-I labelled gelatin from Asterias rollestoni as plasma expander in dog. J Mar Drugs China. 2. 1982. 25-27.

Shen W et al Observations on the retention-time and elimination-pathways of 131-1 labelled starfish gelatin as plasma expander in dogs. J Mar Drugs China. 12. 1984. 25-27.

Skoblina M N; Vasetskii S G; Sekirina G G; Bilinkis A A Hybridization of oocytes of the starfish Aphelasterias japonica Zh Obshch Biol 43. 1982. 847-853.

Sloan N A; Robinson S M C Winter feeding by asteroids on a subtidal sandbed in British Columbia Canada Ophelia 22. 1983. 125-142.

Sluder G; Begg D A Control mechanisms of the cell cycle role of the spatial arrangement of spindle components in the timing of mitotic events J Cell Biol 97. 1983. 877-886. (Echinoidea)

Smetanina O F; Kalinovskii A I; Kuznetsova T A; Stonik V A; Elyakov G B Glycosides of marine invertebrates 17. New genins of glycosides from the Caribbean holothurian Parathyona sp (Holothurioidae Cucumariidae) Chem Nat Compd 19. 1983. 60-63.

Smetanina O F; Kalinovskii A I; Kuznetsova T A; Stonik V A; Elyakov G B Glycosides of marine invertebrates 17. New genins of glycosides from the Caribbean sea-cucumber Parathyona spp (Holothurioidae Cucumariidae) Khim Prir Soedin (Tashk) (1). 1983. 64-68.

Smirnov A V Rynkatorpa duodactyla new-record (Apoda Synaptidae) of sea-cucumber from the North Pacific fauna of the USSR Zool Zh 62. 1983. 75-82.

Smirnova G P; Glukhoded I S; Kochetkov N K Branched disialo glycolipid from the starfish Asterias amurensis Sov J Bioorg Chem 8. 1982. 523-530.

Smirnova G P; Kochetkov N K N acetylgalactosamine containing sialoglyco lipid from hepatopancreas of the starfish Evasterias retifera Bioorg Khim 8. 1982. 102-108.

Smith, A B, 1984. Classification of the Echinodermata Palaeontology. 27, 431-459.

Smith A C Color change in sea-cucumber Pentacta pygmea coelomic fluid as a possible indicator of environmental stress J Aquaric Aquat Sci 3. 1983. 51-52.

Smith C R; Hamilton S C Epibenthic megafauna of a bathyal basin off southern California USA patterns of abundance biomass and dispersion Deep-sea Res Part A Oceanogr Res Pap 30 (9). 1983. 907-928. (Holothuroidea, Ophiuroidea)

Smith K L Jr; Brown N O Oxygen consumption of pelagic juveniles and demersal adults of the deep sea fish Sebastolobus altivelis measured at depth Mar Biol 76. 1983. 325-332. (Ophiuroidea)

Smith T B Tentacular ultrastructure and feeding behavior of Neopentadactyla mixta (Holothuroidea Dendrochirota) J Mar Biol Assoc U K 63. 1983. 301-312.

Smirnova G P; Glukhoded I S; Kochetkov N K Branched disialoglyco lipid from the starfish Asterias amurensis Bioorg Khim 8. 1982. 971-979.

Soliman S Pharmacological control of ciliary activity in the young sea-urchin larva chemical studies on the role of cyclic nucleotides Comp Biochem Physiol C Comp Pharmacol Toxicol 78. 1984. 175-182.

Soliman S Pharmacological control of ciliary activity in the young sea-urchin Psammechinus miliaris larva effects of cholinergic and anticholinergic agents Comp Biochem Physiol C Comp Pharmacol 74. 1983 397-408.

Soliman S Pharmacological control of ciliary activity in the young sea-urchin larva effects of monoaminergic agents Comp Biochem Physiol C Comp Pharmacol Toxicol 76. 1983. 181-192.

Sousa M; Azevedo C Fine structure of the spermatozoon of Marthasterias glacialis (Echinodermata Asteroidea) with special reference to acrosomal morphology Int J Invertebr reprod 6. 1983. 171-180.

Spiegel E; Howard L Development of cell junctions in sea-urchin embryos J Cell Sci (62). 1983. 27-48.

Spirov A V Embryonic structure formation on the basis of cyto-differentiation waves Sov J Dev Biol 13. 1982. 276-283. (Echinoidea)

Sprinkle J Echinoderm faunas from the Bromide Formation Middle Ordovician of Oklahoma USA Univ Kans Paleontol Contrib Monogr (1). 1982. 1-324.

Steneck R S Escalating herbivory and resulting adaptive trends in calcareous algal crusts Paleobiology 9. 1983 44-61. (Echinoidea)

Stonik V A; Mal'tsev I I; Kalinovskii A I; Elyakov G B Glycosides of marine invertebrates 12. Structure of a new triterpenic oligoglycoside from holothurians of the family Stichopodidae Khim Prir Soedin (Tashk) (2). 1982. 200-204.

Stonik V A; Mal'tsev I I; Kalinovskii A I; Konde K; Elyakov G B Glycosides from marine invertebrates 11. 2 new triterpenic glycosides from holothurians of the family Stichopodidae Khim Prir Soedin (Tashk) (2). 1982. 194-199.

Stonik V A; Mal'tsev I I; Elyakov G B Structures of thelenotosides A and B from the sea-cucumber Thelenota ananas Khim Prir Soedin (Tashk) (5). 1982. 624-627.

Stonik V A; Sharypov V F; Kuznetsova T A; Kalinovskii A I Native aglycones of triterpene glycosides of the holothurian Bohadschia argus Chem Nat Compd 18. 1982. 759-760.

Strathmann R R; Strathmann M F; Emson R H Does limited brood capacity link adult size brooding and simultaneous hermaphroditism. A test with the starfish Asterina phylactica Am Nat 123. 1984. 796-818.

Strenger A; Erber W On the larval development of asteroids and a critique on the systematic terms Pelmatozoa and Eleutherozoa within the phylum Echinodermata Z Zool Syst Evolutionsforsch 21. 1983. 235-239.

Stimple H L; Mapes R H Comatulid crinoids from the Jacksonian Eocene of Louisiana USA J Paleontol 58. 1984. 789-792.

Suyemitsu T Calcium uptake by spermatozoa of the sea-urchin Anthocidaris crassispina J Fac Sci Univ Tokyo Sect IV Zool 15. 1982. 173-180.

Sunamoto J; Iwamoto K; Ikeda H; Furuse K Lipsomal membranes 18. Interaction of spermicidal agents with lipsomal membranes. Chem Pharm Bull 31. 1983. 4230-4235. (Echinoidea)

Suprenant K A; Rebhun L I Assembly of unfertilized sea-urchin Strongylocentrotus purpuratus egg tubulin at physiological temperatures J Biol Chem 258. 1983. 4518-4525.

Suzuki N; Kobayashi K; Isaka S Appearance of sperm activation factors in the ovary of the sea-urchin Hemicentrotus pulcherrimus with maturation Experientia 38. 1982. 1245-1246.

Suzuki N; Garbers D L Stimulation of sperm respiration rates by speract and resact at alkaline extracellular pH Biol Reprod 30. 1984. 1167-1174.

Suzuki N; Ohizumi Y; Yasumasu I; Isaka S Respiration of sea-urchin Hemicentrotus pulcherrimus spermatozoa in the presence of a synthetic jelly coat peptid and ionophores Dev Growth Differ 26. 1984. 17-24.

Tagatz M E; Deans C H; Plata G R; Pool J D Impact on and recovery of experimental macrobenthic communities exposed to pentachloro phenol Northeast Gulf Sci 6. 1983. 131-136. (Holothuroidea).

Takahashi K; Yanagisawa T Cytoplasmic distribution of two distinct classes of newly synthesized polyadenylated containing RNA in sea-urchin Hemicentrotus pulcherrimus embryos Zool Mag 92. 1983. 186-191.

Takeshima K; Nakano E Modification of ribosomal proteins in sea-urchin eggs following fertilization Eur J Biochem 137. 1983. 437-444.

Takahashi T C; Sato H Effects of heavy water deuterium oxide on the length of the mitotic period in developing sea-urchin eggs Cell Struct Funct 8. 1983. 357-366.

Takahashi T C; Sato H Yields of tubulin paracrystals vinblastine crystals induced in unfertilized and fertilized sea-urchin Pseudocentrotus depressus eggs in the presence of deuterium oxide Cell Struct Funct 9. 1984. 45-52.

Takasu N; Yoshida M Photic effects on photosensory microvilli in the sea-star Asterias amurensis (Echinodermata Asteroidea) Zoomorphology 103. 1983. 135-148.

Takeuchi K Purifi ation and characterization of exo-beta-1 3 glucanase from a hatching supernatant of Strongylocentrotus intermedius Can J Biochem Cell Biol 61. 1983. 54-62.

Tanaka K; Kozai T Some Cretaceous echinoids from the Monobe Area Central Shikoku Japan Trans Proc Palaeontol Soc Jpn New Ser (126). 1982. 341-355.

Taylor J D A partial food web involving predatory gastropods on a Pacific fringing reef J Exp Mar Biol Ecol 74. 1984. 273-290. (Ophiuroids).

Tegner M J; Levin L A Spiny lobsters P anulirus interruptus and sea-urchins analysis of a predator prey interaction J Exp Mar Biol Ecol 73. 1983. 125-150.

Telford M An experimental analysis of lunule function in the sand-dollar Mellita quinquiesperforata Mar Biol 76. 1983. 125-134.

Terashita S; Kato T; Sato H Reaction mechanisms of 21S dynein ATPase EC-3.6.1.3 from sea-urchin Pseudocentrotus depressus sperm 1. Kinetic properties in the steady-state J Biochem 93. 1983. 1567-1574.

Terashita S; Kato T; Sato H; Tonomura Y Reaction mechanism of 21S dynein ATPase from sea-urchin Hemicentrotus pulcherrimus sperm 2. Formation of reaction intermediates J Biochem 93. 1983. 1575-1582.

Terent'ev L L; Terent'eva N A; Rasskazov V A Processivity and some properties of DNA polymerase from sea-urchin Strongylocentrotus intermedius embryos Biokhimiya 48. 1983. 224-229.

Thomassin B A; Jouin C; Renaud-Mornant J; Richard G; Salvat B Macrofauna and meiofauna in the coral sediments on the Tiahura Reef complex Moorea Island French Polynesia Tethys 10. 1982. 392-397. (Asteroidea, Echinoidea)

Tilney L G; Bonder E M; Coluccio L M; Mooseker M S Actin from Thyone briareus sperm assembles on only one end of an actin filament a behavior regulated by profilin J Cell Biol 97. 1983. 112-124. (Holothuroidea).

Tominaga A Peroxidatic activity of catalase in the sea-urchin ovary Acta Histochem Cytochem 15. 1982. 746-756.

Tortonese E Remarks on the morphology and taxonomy of Ophioderma longicaudum from the Mediterranean Atti Soc Ital Sci Nat Mus Civ Stor Nat Milano 124. 1983. 21-28.

Tortonese E The asteroids of the seas surrounding Sicily and Sardinia Italy Nat Sicil 7. 1983. 19-34.

Tortonese, E. 1984. Young stage of Chaetaster longipes (Retz.) (Echinodermata, Asteroidea). Oebalia. 20, 133-139.

Turner, R.L. 1984. Revision of Ophiopaepale ljungman, 1872 (Echinodermata: Ophiuroidea), with a redescription of O. goesiana Ljungman, 1872, and notes on O. diplax (Nielsen, 1932), new combination. Proc. Biol. Soc. Wash. 97. 927-941.

Tyler P A; Gage J D Thereproductive biology of echinothuriid and cidarid sea-urchins from the deep sea Rockall Trough northeast Atlantic Ocean Mar Biol 80. 1984- 63-74.

Tyler P A; Gage J D Seasonal reproduction of Echinus affinis (Echinodermata Echinoidea) in the Rockall Trough northeast Atlantic Ocean Deep-sea Res Part A Oceanogr Res Pap 31. 1984. 387-402.

Tyler P A; Gage J D The reproductive biology of Ypsilothuria talismani (Holothuroidea Dendrochirota) from the northeastern Atlantic J Mar Biol Assoc U K 63. 1983. 609-616.

Ushakov B P Physiological structure of a population arising during thermal selection Institute cytol., Academy Sciences, USSR, Leningrad. Sov Genet 18. 1982. 573-580. (Echinoidea)

Ushakov B P Evolutionary importance of temperature adaptations in animals USP Sovrem Biol 93. 1982. 302-319. (Echinoidea)

Usi N; Yoneda M Ultrastructural basis of the tension increase in sea-urchin Hemicentrotus pulcherrimus eggs prior to cytokinesis Dev Growth Differ 24. 1982. 453-466.

Vacquier V D Purification of sea-urchin Strongylocentrotus purpuratus sperm bindin by DEAE cellulose chromatography Anal Biochem 129. 1983. 497-501.

Vashchenko M A Autoradiographic study of the effect of water soluble hydrocarbons of light diesel fuel on RNA and protein synthesis in oocytes of the sea-urchin Strongylocentrotus nudus Sov J Mar Biol 9. 1983. 42-45.

Vasil'Eva V S; Glushankova M A; Zhirmunskii A V The heat resistance of cells and muscle aldolase of systematically close species of bivalve mollusks and sea-urchins in connection with environmental conditions. Biol Morya (6). 1982. 41-45.

Vasil'eva V S; Glushankova M A; Zhirmunskii A V Heat resistance of cells and muscle aldolase of systematically close species of bivalve mollusks and sea-urchins by association with environmental conditions Sov J Mar Biol 8. 1982. 324-328.

Vas'Kovskii V E; Romashina N A Sea-urchin Strongylocentrotus intermedius as a source of eicosapentaenoic-acid Bioorg Khim 9. 1983. 266-269.

Vas'Kovskii V E; Romashina N A; Levin V S Content of eicosapentaenoic-acid in the sea-urchins Strongylocentrotus intermedius from different habitats Biol Morya (9). 1983. 67-70.

Vas'Kovskii V E; Svetashev V I; Khotimchenko S V Selective digestion and absorption of lipids in the alimentary canal of the sea-urchin Strongylocentrotus intermedius Zh Evol Biokhim Fiziol 18. 1982. 519-522.

Vasquez, J.A., J.C. Castilla, B. Santelices. 1984. Distributional patterns and diets of four species of sea urchins in giant kelp forest (Macrocystis pyrifera) of Puerto Toro, Navarino Island, Chile. Mar. Ecol. Prog. Ser. 19, 55-63.

Vassetzky S G; Sekirina G G; Veisman B L; Skoblina M N; Bilinkis A A The fusion oocytes of the starfish Aphelasterias japonica 3. Reconstruction of oocytes from cells and cell fragments cytoplasts Cell Differ 14. 1984. 47-52.

Verlaque, M., H Nedelec. 1983. Note preliminaire sur les relations biotiques Paracentrotus lividus (Lmk.) et herbier de posidonies. Rapp. Comm. Int Mer Medit. 28, 157.

Verlaque, M. 1984. Biologie des juveniles de l'oursin herbivore Paracentrotus lividus (Lamarck): selectivite du broutage et impact de l'espece sur les communautes algales de substrat rocheux en Course (Mediterranee, France). Bot. Mar. 27, 401-424.

Viera L I Biostratigraphic notes on a community of echinoids in the upper cretaceous of San Martin Amescoa Baja Navarra Spain Munibe 35. 1983. 29-34.

Vink, S., M.J. Atkinson. 1985. High dissolved C:P excretion ratios for large benthic marine invertebrates. Mar. Ecol. 21, 191-195. (echinoids, asteroids, holothuroids).

Vlasova G A; Khristoforova N K The effect of cadmium on early ontogenesis of the sea-urchin Strongylocentrotus intermedius Bio Morya (4). 1982. 31-36.

Vogel H; Chang P; Wolf W; Czihak G Fertilization kinetics of sea-urchin Paracentrotus lividus eggs Math Biosic 58. 1982. 189-216.

Volina E V; Markova L N; Rakich L; Manukhin B N; Buznikov G A The characteristics of serotonin and tryptamine binding by early sea-urchin embryos J Evol Biochem Physiol 19. 1983. 91-95.

Volina E V; Markova L N; Rakich L; Ma ukhin B N; Buznikov G A Serotonin and tryptamine binding by early embryos of the sea urchins Zh Evol Biokhim Fiziol 19. 1983. 121-126.

Volkov Yu P; Dadaev A A; Levin V S; Murakhveri A M Changes in distribution of the scallop Patinopecten yessoensis and sea-stars Asterias amurensis after massive introduction of scallops on the bottom in Vityaz Bay Sea of Japan Biol Morya (4). 1982. 37-43.

Volkov Yu P; Dadaev A A; Levin V S; Murakhveri A M Changes in the distribution of yezo scallop Patinopecten yessoensis and starfishes after mass planting of scallops at the bottom of Vityaz' Bay USSR Sea of Japan Sov J Mar Biol 8. 1982. 216-223.

Vonk, J H, J R H Western (eds.). 1984. Comparative biochemistry and physiology of enzymatic digestion. Academic Press. (echinoderms: chapter 6, pp 233-246)

Voogt P A; De Groot F F Stimulation of germinal vesicle breakdown in zebrafish oocytes by ovarian asterosaponins from the sea-star Asterias rubens Comp Biochem Physiol C Comp Pharmacol 74. 1983. 419-424.

Voogt, P A, J W A van Rheenen. 1984. Is the level of cyclic AMP in the pyloric caeca of the starfish Asterias rubens related to the reproductive cycle. Comp. Biochem. Physiol. 78B, 719-722.

Wadsworth P; Sloboda R D Microinjection of fluorescent tubulin into dividing sea-urchin Lytechinus variegatus cells J Cell Biol 97. 1983. 1249-1254.

Wagenaar E B The timing of synthesis of proteins required for mitosis in the cell cycle of the sea-urchin embryo Exp Cell Res 144. 1983. 393-404.

Wagenaar E B Increased free calcium levels delay the onset of mitosis in fertilized and artificially activated eggs of the sea-urchin Exp Cell Res 148. 1983. 73-82.

Walker, C., D. Larochelle. 1984. Interactions between germinal and somatic accessory (SA) cells of the spermatogenic epithelium of Asterias vulgaris in vivo and in vitro. Adv. Invert. Reprod. 3, 41-52.

Wang G; Li C The immune stimulating effect of acidic polysaccharide from Holothria leucospilota on mice. J Mar Drugs China. 9. 1984. 12-15.

Ward G E; Vacquier V D; Michel S The increased phosphorylation of ribosomal protein S-6 in Arbacia punctulata is not a universal event in the activation of sea-urchin eggs Dev Biol 95. 1983. 360-371.

Worrbin, F, U Bamstedt. 1984. Energy contents in benthic and planktonic invertebrates of Kosterfjorden, Sweden. A comparison of energetic strategies in marine organism groups. Ophelia. (asteroids, ophiuroids, echinoids, holothuroids)

Yablonka-reuveni Z; Hille M B Isolation and distribution of elongation factor 2 in eggs and embryos of sea-urchins Strongylocentrotus purpuratus Biochemistry 22. 1983. 5205-5212.

Yakovlev S N Reproductive cycle in the Antarctic sea-urchin Sterechinus neumayeri from t e Davis Sea Biol Morya (5). 1983. 35-39.

Yamada Y; Aketa K A species specific sperm factor dispersing the jelly coat of the egg of the sea-urchin Anthocidaris crassispina Gamete Res 8. 1983. 279-294.

Yamada Y; Aketa K Vitelline layer lytic activity in sperm extracts of sea-urchin Hemicentrotus pulcherrimus . Gamete Res 4. 1981. 193-202.

Yamagucni, M, J S Lane. 1984. Natural parthenogenesis, larval and juvenile development, and geographical distribution of the coral reef asteroid Ophidiaster granifer. Mar. Biol. 83, 33-42.

Yamamoto K; Yoneda M Cytoplasmic cycle in meiotic division of starfish Asterina pectinifera oocytes Dev Biol 96. 1983. 166-172.

Yamamoto Y; Kato K H An analysis of fertilization kinetics by a probability model 1 Bull Coll Gen Educ Nagoya City Univ (Nat Sci Sect) 29. 1983. 17-28. (Echinoidea)

Yamashita M; Iwata F A quantitative analysis of the annual testicular cycle of the brittle-star Amphipholis kochii by means of autoradiographic investigation Biol Bull 164. 1983. 327-340.

Yamashita M A fine structural study of spermatogenesis in the brittle-star Ophiura sarsii (Echinodermata Ophiuroidea) with a demonstration of the precocious formation of the acrosome J Fac Sci Hokkaido Univ Ser VI Zool 23. 1983. 254-265.

Yamashita M Ultrastructure of the gonadal wall of two brittle-stars Amphipholis kochii and Ophiura sarsii (Echinodermata Ophiuroidea) J Fac Sci Hokkaido Univ Ser Vi Zool 23. 1983. 245-253.

Yamashita M Electron microscopic observations during monospermic fertilization process of the brittle-star Amphipholis kochii J Exp Zool 228. 1983. 109-120.

Yamazaki M; Ikenami M; Komano H; Tsunawaki S; Kamiya H; Natori S; Mizuno D Polymorphonuclear leukocyte mediated cytolysis induced by animal lectin Gann 74. 1983. 576-583. (Asteroidea)

Yoo S K; Hur S B; Ryu H Y Growth and spawning of the sea-urchin Anthocidaris crassispina Bull Korean Fish Soc 15. 1982. 345-358.

Yoshida M; Aketa K A 225 kilodalton glycoprotein is the active core structure of the sperm binding factor of the sea-urchin Anthocidaris crassispina Exp Cell Res 148. 1983. 243-248.

Yui M A; Bayne C J Echinoderm immunology bacterial clearance by the sea-urchin Strongylocentrotus purpuratus Biol Bull 165. 1983. 473-486.

Zhang X; Zheng D. Pharmacological studies of acidic mucopolysaccharide from Solaster dawsoni. J Mar Drugs China 5. 1983. 23-24.
Zieman J C; Iverson R L; Ogden J C. Herbivory effects on Thalassia testudinum leaf growth and nitrogen content. Mar. Ecol. Prog. Ser. 15. 1984. 151-158 (echinoids)
Zitt J. Spoon-like crinoids from Stramberk Lower Cretaceous Czechoslovakia. Sb Nar Muz Praze Rada B Prir Vedy. 39. 1983. 69-114.
Zmarzly, D L. 1984. Distribution and ecology of shallow-water crinoids of Enewetak Atoll, Marshall Islands, with an annotated check list of their symbionts. Pac Sci. 38, 105.

Addendum

Achituv, Y, Z Malik 1985. The spermatozoa of the fissiparous starfish Asterina burtoni. Int J Invert Reprod Develop 8, 67-72.
Arteche, I; A Rallo. Equinodermos de las costas de Galicia y Cornisa Cantabrica: Catalogo previo. Cuadernos de Investigacion Biol. Monografias 1.
Beijnink, F B, C W Walker, P A Voogt. An ultrastructural study of relationships between the ovarian haemal system, follicle cells, and primary oocytes in the sea-star, Asterias rubens. Implications for oocyte nutrition. Cell Tiss Res 1984. 238, 339-346.
Beijnink, F B, P A Voogt. Nutrient translocation in the sea star, whole-body and microautoradiography after ingestion of radiolabeled leucine and palmitic acid. Biol. Bull. 167. 1984. 669-682.
Bell, M V, Sargent J R. Fatty acid analysis of phosphoglycerides from tissues of the clam Chlamys islandica (Muller) and the starfish Ctenodiscus crispatus (Retzius) from Baisfjorden, Northern Norway. J Exp Mar Biol Ecol 87. 1985. 31-40.
Bisol, C M, Costa R, Sibuet M. Ecological and genetical survey on two deep-sea holothurians: Benthogone rosea and Benthodytes typica. Mar Ecol Prog Ser. 15. 1984. 275-281.
Brankley W O, Branch G M. Co-operative prey capture and unusual brooding habits of Anasterias rupicola (Verrill) (Asteroidea) at sub-antarctic Marion Island. Mar Ecol Prog Ser. 20. 1984. 171-176.
Cadee, G C. Macrobenthos and macrobenthic remains on the Oyster Ground, North Sea. Netherlands J Sea Res. 18. 1984. 160-178 (ophiuroids, echinoids)
Castro, P. Notes on symbiotic decapod crustaceans from Gorgona Island, Colombia, with a revision of the eastern Pacific species of Trapezia (Brachyura, Xanthidae), symbionts of scleractinian corals. An Inst Invest Mar Punta Betin. 12. 1982. 9-17 (echinoderms)
David, B, Sibuet M. Distribution et diversite des Echinides. In: Peuplements profonds du Golfe de Gascogne. IFREMER. 1985. 509-534.
DeWilde, P A W J, Berghuis E M, Kok A. Structure and energy demand of the benthic community of the Oyster Ground, central North Sea. Netherlands J Sea Res. 18. 1984. 143=159 (ophiuroids, echinoids)
Denny, M W, Daniel T L, Koehl M A R.Mechanical limits to size in wave-swept organisms. Ecol Monogr 55. 1985. 69-102. (echinoids)
Fenaux L, Cellario C, Etienne M. Croissance de la larve de l'oursin Paracentrotus lividus. Mar Biol. 86. 1985. 151-157.
Féral, J -P, Magniez P. Level, content and energetic equivalent of the main biochemical constituents of the subantarctic molpaid holothurian Eumolpadia violacea (Echinodermata) at two seasons of the year. Comp. Biochem. Physiol. 81A. 1985. 415-422.
Herrin, D, Helling C, Watts, S A. Relative levels of actin and actin gene sequences in tube feet and pyloric caeca of the adult starfish, Luidia clathrata (Echinodermata: Asteroidea). Comp Biochem Physiol. 81B, 143-147. 1985.
Saita, A, MDC Carnevali, M Canonaco. 1982. Muscle system organization in the echinodersm. I. Intervertebral muscles of Ophiothrix longicaudum (Ophiuroidea) J. Submicrosc. Cytol. 14, 291-304

Germain P, Boust B, Sibuet M, Philippot J C, Hemon G. Analyses elementaires de sediments et d'organismes provenant de la plaine abyssal du Cap Vert (sites CV1 et CV2). Rap CEA-R-5275. 1984. 16 p.

Guozhen, L. A report on the echinoderms from the Xisha-Zhongsha Islands Guangdong Province China. Contr Mar Biol Res South China Sea. 1983. 273-274.

Harriott, V J. Reproductive biology of three congeneric sea cucumber species, Holothuria atra, H impatients, and H edulis, at Heron Reef Great Barrier Reef. Austr J Mar Freshwat Res. 36. 1985. 51-58.

Jangoux, M, Aziz A. Les astérides (Echinodermes) du centre-ouest de l'océan Indien (Seychelles Maldives et îles Mineures). Bull Mus natn Hist Nat, Paris 4 ser. 6 (A). 1984. 857-884.

Kammer, T W. Aerosol filtration theory applied to Mississipian deltaic crinois. J Paleontol. 59. 1985. 551-560.

Klinger, T S, Diehl W J. Activities and kinetics of digestive a- and b-glucosidase and b-galactosidase of Luidia clathrata (Say) (Echinodermata: Asteroidea). Comp. Biochem. Physiol. 81B. 1985. 401-403.

Lane, N G. Predation and survival among inadunate crinoids. Paleobiology 10. 1984. 453-458.

Lane, N G, Sevastopoulo G D. Redescription of Allagecrinus americanus Rowley 1895 a Late Devonian micronCrinoid. J Paleontol. 59. 1985. 438-445.

Lane N G, Sevastapulo G D, Strimple H L. Amphipsalidocrinus: a monocyclic camerate crinoid. J Paleontol. 59. 1985. 79-84.

Lee, I K, Kim H S, Koh C H, Kang J W, Hong S Y, Boo S M, Kim I H, Kang Y C. Qualitative and quantitative analysis of the community structaure in south-eastern coast of Korea. Proc College Nat Sci Seoul Nat Univ. 9. 1984. 71-126. (crinoids, asteroids, ophiuroids, echinoids, holothuroids)

López-Ibor, A. Equinodermos del Mar de Alboran. Fonds Coraligenos. Actas del IV Simp Iberico de Estudos do Benthos Marinho. 3. 1984. 21-25.

Mauviel A, Sibuet M. Repartition des traces animales et importance de la bioturbation. In: Peuplements profonds du Golfe de Gascogne. IFREMER. 1985. 157-163.

McClintock, J B. 1985. Avoidance and escape responses of the sub-antarctic limpet Nacella edgari (Powell) (Mollusca: Gastropoda) to the sea star Anasterias perrieri (Smith) (Echinodermata: Asteroidea). Polar Biol. 4. 95-98.

McClintock, J B, Lawrence J M. Characteristics of foraging in the soft-bottom benthic starfish Luidia clathrata (Echinodermata: Asteroidea): prey selectivity, switching behavior, functional responses and movement patterns. Oecologia. 66. 1985. 291-298.

McCurda Jr, M. Systematics of the fissiculate Blastoidea. Univ. Michigan Papers Paleon. No. 22. 1983. 291 p.

Menge, B A, Lubchenco J, Ashkenas L R. Diversity, heterogeneity and consumer pressure in a tropical rocky intertidal community. Oecologia. 65. 1985. 394-405. (echinoids)

Miller, R L. Demonstration of sperm chemotaxis in Echinodermata: Asteroidea, Holothuroidea, Ophiuroidea. J Exp Zool. 234. 1985. 383-414.

Nichols D, Sime A A T, Bishop G M. Growth in populations of the sea urchin Echinus esculentus L. (Echinodermata: Echinoidea) from the English Channel and the Firth of Clyde. J Exp Mar Biol Ecol 86. 1985. 219-228.

Pareyn C, Brebion P, Buge E, Carriol R-P, Lauriat-Rage A, Le-Calvez Y, Roman J. Le giesement pliocène de Cricqueville-en-Bessin (Calvados). Etude géologique et paléontologique. Bull Mus natn Hist Nat. 5. 1983. 367-405 (echinoids)

Patterson G L J, Lambshead P Y D, Sibuet M. The Ophiuroidea fauna of the Bay of Biscay: its distribution and diversity. In: Peuplements profonds du Golfe de Gascogne. IFREMER. 1985. 491-507.

Tyler, P A, A Muirhead, D S M Billett, J D Gage. 1985. Reproductive biology of the deep-sea holothurians Laetomogone violacea and Benthogone rosea (Elasipoda: Holothuroidea). Mar. Ecol. Prog. Ser. 23, 269-277.

Carnevali, MDC, A Saita. 1985. Microscopic anatomy and functional significance of the muscle-ligament-skeleton system in the arm of the comatulids (Antedon mediterranea). J. Morphology. 185, 59-74

Carnevali,MDC,A Saita.1985. Fine structure of the contractile apparatus of the arm flexor muscles of the comatulids (Antedon mediterranea). J. Morphology. 195. 85-87.

Pinto, L. Gut content and food consumption of some echinoderms at Talin Bay Batangas Philippines. Philipp J Biol 11. 1982. 302-308. (echinoids, asteroids, ophiuroids).

Roman J. Un Echinide Spatangoide muni de ses piquants dans le Baronien (Eocene) du Val d'Oise. C R 108e Congr natn Soc sav. 1983. 88-99.

Roman J. Position insolite d l'anus chez un Echinide Cassiduloide fossile. C R 109e Congr nat Soc sav. 1984. 385-394.

Roman J. Les Echinides et les milieux de vie du Tertiaire. Quelques exemples. Geobios Mem spec. 8. 1984. 115-124.

Schneider, E G. Cell-cell recognition and adhesion during embyrogenesis in the sea urchin: demonstration of species-specific adhesion among Arbacia punctulata, Lytechinus variegatus, and Strongylcoentrotus purpuratus. Biol. Bull. 168. 1985. 61-74.

Sibuet M, Monniot C, Desbruyeres D, Dinet A, Khripounoff A, Rowe G, Segonzac M. Peuplements benthiques et caractéristiques trophiques du milieu dans la plaine abyssale de Demerara dans l'Ocean Atlantique. Oceanol. Act. 7. 1984. 345-358.

Sibuet. M. Les invertébrés détritivores dans l'écosystème abyssal. Sélection de la nourriture et regime alimentaire chez les holothuries. Oceanis. 10. 1984. 623-639.

Sibuet M, Segonzac M. Abondance et repartition d l'epifaune megabenthique. In: Peuplements profonds du Golfe de Gascogne. IFREMER. 1985. 143-156.

Sparling M L, Killeen T, Sinisgallo Y, Yabuta C. Effects of redox agents on glucose-6-phosphate dehydrogenase isozymes and enzyme activity in sea urchin eggs and zygotes. J Exp Zool. 234. 1985. 459-470.

Telford M. 1985. Domes, arches and urchins: the skeletal architecture of echinoids (Echinodermata). Zoomorphology. 105. 1985. 114-124.

Tortonese E. Echinodermi del Museo di Storia Naturale di Vernoa. Museo Civico di Storia Naturale di Verona. Ser Catl N. 2. 1984.

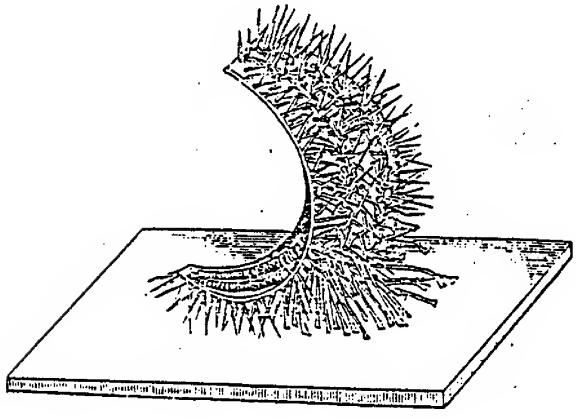
Waters J A, Horowitz A S, Macurda Jr D B. Ontogeny and phylogeny of the Carboniferous blastoid Pentremites. J Paleontol. 59. 1985. 701-712.

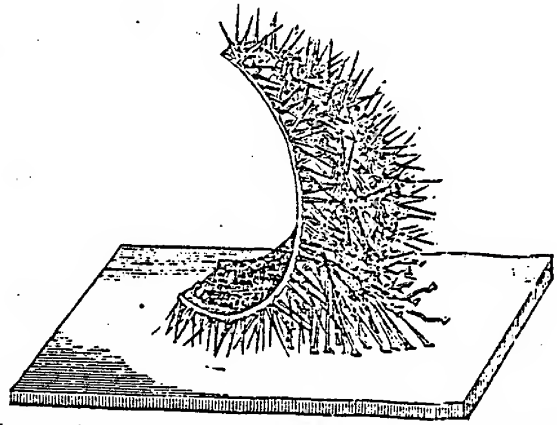
Wiener S. Organic matrixlike macromolecules associated with mineral phase of the sea urchin plates and skeleton. J Exp Zool. 234. 1985. 7-15.

Fantini B. The sea urchin and the fruit fly: cell biology and heredity, 1900-1910. Biol Bull. 168. 1985. 99-106.

Cobb J L S. The neurobiology of the ectoneural/hyponeural synaptic connection in an echinoderm. Biol Bull. 168. 1985. 432-446.

JELLY-FISH, STAR-FISH, AND SEA-URCHINS. Romanes. 1885.





Figs. 62 and 63.—Righting and ambulacral movements of severed segments of Echinus.

A LIST OF ECHINODERM SPECIALISTS

The list gives the names of those individuals who returned the information form. Numbers given after the name indicate the individual's area of interest.

A grouping of individuals by country and area of interest is given following the list.

Those whose names are not included here and those who have a change of address can use the last page of this newsletter to send the information to the editor.

The last page of the newsletter can also be used to submit requests, information about current research, meetings, publications, suggestions.

Material received will be published in the summer 1986 newsletter.

Code (areas of interest):

1 asteroids
2 ophiuroids
3 echinoids
4 holothuroids
5 crinoids
6 blastoids
7 edrioasteroids
8 stylophorans
9 paleontology
10 ecology
11 behavior
12 physiology
13 biochemistry
14 embryology, developmental biology
15 systematics
16 anatomy
17 functional morphology
18 reproduction
19 larvae
20 evolution
21 biogeography

Albuquerque, Maria da Natindade. Universidade Santa Ursula, Depto de Ciencias Biologica, Rua Fernando Ferrari, 75 Botafol RJ, Brasil: 2,15.

Aldrich, Frederick A. Memorial University, Dept. of Biology, School of Graduate Studies, St. John's NFLD A1C 5S7, Canada: 1,4,16,17.

Alvarez, Leonardo Ramón. Instituto Mexicano del Petroseo, Departmento De Ecologia, Eje Central Lazaro Gardens #152, D.F. 07730, Mexico: 3,4,10,12.

Alvarez, Martinez de Saavedra. Departmento de Zoologia, Universidad de la Laguna, Tenerife, Canary Islands: 3,10,19.

Andrade, Hector. Universidad de Valparaiso, Instituto de Oceanología, Casilla 13-D, Vina Del Mar, Chile: 1,2,3,10,14,21.

Arendt, Yurii A. Paleontological Institute of the Academy of Sciences, Profsojouznaja str., 113, 117321 Moscow, USSR: 5,6,7,8,15,16,17,20.

Arnaud, Patrick M. Station Marine d'Endoume, 13007 Marseille, France: 1,2,3,4,10,11.

Arteche Irueta, Iñaki. Departamento de Biologia (Zool.), Facultad de Ciencias, Apartado 644, 48080 Bilbao, Spain: 1,2,3,4,5,15,21.

Ausich, William I. The Ohio State University, Department of Geology and Mineralogy, Columbus, OH 43210-1398, USA: 5,9,10,15,17.

Aziz, Aznam. National Institute of Oceanology, Jakarta, Indonesia: 1,2,3,4,5,10,15.

Barker, Michael F. Portobello Marine Laboratory, P.O. Box 8, Portobello, Dunedin, New Zealand: 1,2,3,4,5,10,11,12,13,14,15,16,17.

Basch, Larry. City of San Diego Marine Biology Section, Point Loma Laboratory, 4077 N. Harbor Drive, San Diego, CA. 92101, USA: 1,2,3,10,11,15.

Beijnink, Frits B. Lab. of Chemical Animal Physiology, 8 Padualaan, 3508 TB Utrech, The Netherlands: 1,2,3,4,5,12,13,16,17.

Belyaev, George M. Institute of Oceanology, USSR Academy of Sciences, Krassikova str., 23, Moscow 117218, USSR: 1,4,10,15,21.

Bergen, Mary. University of Southern California, Department of Biology, University Park, Los Angeles, CA 90089-0371, USA: 4,10,15.

Berger, Jacques. University of Toronto, Department of Zoology, Toronto, Ontario M5S 1A1, Canada: 3,10,12,15.

Birkeland, Charles. Marine Laboratory, UOG Station, Mangilao, 96913, Guam: 1,2,3,4,5,10,11.

Birtles, Alastair. James Cook University of N. Queensland, School of Biological Sciences, Marine Biology Department, Townsville, QLD 4811, Australia: 1,2,3,4,5,10,11,15.

Black, Robert. Department of Zoology, University of Western Australia, Nedlands, W.A. 6009, Australia: 1,3,10,17.

Blake, Daniel B. Geology, 245 National History Building, 1301 W. Green Street, Urbana, IL 61801, USA: 1,9,10,11,15,16,17.

Booth, Jr., Billy B. Mote Marine Laboratory, 1600 City Island Park, Sarasota, FL 33577, USA: 1,2,3,4,10,15.

Boudouresque, C.F. Faculté des Sciences de Luminy, Laboratoire d'Ecologie du Benthos et de Biologie Végétale Marine, 13288 Marseille Cedex 9, France: 3,10,11.

Branstrator, Jon W. Department of Geology, Earlham College, Richmond, IN 47374, USA: 1,9,10,15,17.

Bray, Richard D. NL ERCO/NL Industries Inc., 15702 West Hardy, Houston, Texas 77060, USA: 2,11,17,18.

Breton, Gérard. Museum d'Histoire Naturelle, Place du Vieux-Marché, F 76600 Le Havre, France: 1,2,5,9.

Broadhead, Thomas W. Dept. of Geological Sciences, University of Tennessee, Knoxville, TN 37996-1410, USA: 5,9,17,20.

Broertjes, Jan J.S. Laboratory of Chemical Animal Physiology, State University of Utrecht, Padualaan 8, 3508 TB, 3508 TB Utrecht, Netherlands: 1,12,13,17.

Broom, D.M. Department of Pure and Applied Zoology, University of Reading, Reading RGG 2AJ, England: 2,10,11,12.

Brower, James C. Syracuse University, Department of Geology, Syracuse, NY 13210, USA: 5,9,15,17,20.

Brunel, Pierre. Département de Sciences biologiques, Université de Montréal, C.P. 6128, Montréal, QC H3C 3J7, Canada: 10.

Buckland-Nicks, John. Department of Zoology, University of Alberta, Edmonton, Alberta T6G 2E9, Canada: 2,14,18.

Burke, Robert D. Department of Biology, University of Victoria, Victoria, British Columbia V8W 2F2, Canada: 1,2,3,4,5,12,13,14,17.

Bussarawich, Somchai. Phuket Marine Biological Center, P.O. Box 60 Phuket 8300, Phuket, Thailand: 1,2,3,4,5,10,15.

Byrne, Maria. Harbor Branch Foundation, Route 1, Box 196, Fort Pierce, FL 33450, USA: 2,4,5,10,11,12,16,17,18.

Caine, Gary. Department of Biology, University of Victoria, Victoria, B.C. V8W 2F2, Canada: 1,12,13,14,16.

Caldwell, John W. CH2M-Hill, 350 Fairway Drive, #210, Deerfield Beach, FL 33441, USA: 3,10,12,14.

Cameron, J. Lane. Friday Harbor Laboratories, P.O. Box 459, Friday Harbor, Washington 98250, USA: 1,4,10,14,15,17.

Cameron, R. Andrew. Department of Marine Science, University of Puerto Rico, Mayaguez 00708, Puerto Rico: 1,2,3,4,10,14,17,19.

Campbell, Andrew C. School of Biological Sciences, Queen Mary College, University of London, Mile End Road, London E1 4NS, England: 1,3,10,11,12,16,17.

Campbell, David B. Zoology Department, University of New Hampshire, Durham, NH 03824, USA: 1,2,3,4,5,10,11,12,15,17.

Cannon, L.R.G. Curator of Lower Invertebrates, Queensland Museum, Gregory TCE, Brisbane QLD 4006, Australia: 1,3,4.

Carpenter, Robert C. Marine Systems Lab., Smithsonian Institution, W310 NHB, Washington, D.C. 20560, USA: 3,9,10,11,12,14,15,17.

Carson, Sally. Department of Zoology, Biological Sciences Building, University of Alberta, Edmonton, Alberta T6G LE9, Canada: 1,4,10,14,18.

Caso, María Elena. Inst. de Cinencias de Mar y Limnología, Laboratorio Ecología de Equinodermos, U.N.A.M. Apo. 70-305, Ciudad Univ., Código 04510, D.F., México: 1,2,3,4,10,11,12,15,16,21.

Caster, Kenneth. Department of Geology, University of Cincinnati, Cincinnati 21, OH, USA: 7,8,9,15,17.

Chaet, A.B. University of West Florida, Research and Sponsored Programs, Pensacola, FL 32514, USA: 1,12.

Chauvel, Jean. Laboratoire de Paléontologie, Institut de Geologie, Avenue du Général Leclerc, B.P. 25A 35042 Rennes-Cedex, France: 8,9.

Chen, Chang-Po. Institute of Zoology, Academia Sinica, Nankang, Taipei, Taiwan, R.O.C.: 1,2,3,4,5,10,11,12,15,17.

Cherbonnier, Gustave. Laboratoire du Biologie des Invertébrés marins, 55 rue du Buffon, 75005 Paris, France: 1,2,3,4,5,10,15.

Chiu, Sein Tuck. Dept. of Zoology, Hui oi Chow Science Building, University of Hong Kong, Pokfulham Road, Hong Kong: 1,3,10,11,12,18.

Clark, Ailsa M. British Museum (Nat. Hist.), Cromwell Road, London SW7 5BD, England: 1,5,15,17,21.

Conand, Chantal. Université de Bretagne Occidentale, Laboratoire de biologie animale, 29283 Brest, France: 4,10,12.

Concepcion, Marcos. Departamento de Ecologia, Facultad de Biologia, Universidad de Murcia, Murcia, Spain: 2,3,4,10,15.

Constable, Andrew J. Zoology, University of Melbourne, Parkville, Victoria 3052, Australia: 3,10,11.

Costelloe, John. Zoology Department, U.C.G., Galway, Ireland: 2,5,10,14,15,16,17.

Couilard, Pierre. Département Sc Biologiques, University de Montréal, C.P. 6128 Suce A., Montréal Que. H3C 3J7, Canada: 3,10,14.

Cuenca, Catherine. Museum Histoire de Nantes, 12 rue Voltaire, 44000 Nantes, France: 1,3,4,10,11,15,16,17.

Cutress, Bertha M. Department of Marine Sciences, Univ. of Puerto Rico at Mayaguez, Mayaguez 00708, Puerto Rico: 4,10,14,15.

Dafni, Jacob. H. Steinitz Marine Biology Lab., P.O. Box 469, Eilat 88103, Israel: 3,9,10,11,12,17.

David, Bruno. Institut des Sciences de la Terre, , 6 bd Gabriel, 21100 Dijon, France: 3,9,10,17,20,21.

Davis, Karen K. University of California, Applied Sicences Building, Santa Cruz, CA 95064, USA: 1,14,18.

De Greef, Yves. Laboratoire de Biologie Marine C.P. 160, Université Libre de Bruxelles, av. F.D. Roosevelt, 50, B-1050 Bruxelles, Belgium: 3,14,17.

De Moura-Britto, Mauro. Departmento de Zoologia, Universidad Federal do Parana, Cx. P. 3034 , Curitiba, PR 80000, Brasil: 1,2,10,11,14,15,17.

De Ridder, Chantal. Laboratoire de Biologie Marine(C.P. 160), Université Libre de Bruxelles, 50 av. F.D. Roosevelt, 1050 Bruxelles, Belgium: 3,10,11,12,16,17.

De Vos, Louis. Lab. de Biologie Animale(C.P. 160), Universite Libre de Bruxelles, 50 av. F.D. Roosevelt, 1050 Bruxelles, Belgium: 1,2,3,4,5,14,16,17.

Dearborn, John H. Department of Zoology, University of Maine, Orono, Maine 04469, USA: 1,2,5,10,11,15,17.

DeCelis, Alexandro K. National Museum, Executive Building, Rizal Park, Ermita, Manila, Philippines: 1,2,3,10.

Demarge, Michel. , Rue de l'Ancienne Mairie, 38730 Virieu sur Bourbre, France: 3,9,10,15.

Derstler, Kraig. Dept. Earth Sciences, University of New Orleans, New Orleans, LA 70148, USA: 4,7,8,9,17,20.

Diehl, Walter J. Department of Ecology and Evolution, State University of New York, Stony Brook, NY 11794, USA: 1,2,3,4,10,12,13.

Dix, Trevor G. Fisheries Research Laboratory, Taroona, Tasmania 7006, Australia: 3,10.

Dobson, William E. Department of Biology, University of South Carolina, Columbia, South Carolina 29208, USA: 1,2,4,5,10,12,13,17.

Donovan, Stephen K. Dept. of Geology, Trinity College, Dublin 2, Ireland: 5,6,8,9,10,11,17.

Downey, Maureen E. Department of Invertebrate Zoology, National Museum of Natural History, Washington, D.C. 20560, USA: 1,15.

Dravage, Philip. Geology Dept., Univ. of Cincinnati, Cincinnati, Ohio 45221, USA: 1,2,3,7,8,9,10,15,17.

Dube, Francois. Université du Quebec a Rimouski, Département d'Oceanographie, Rimouski, Quebec, Canada: 3,15.

Dubois, Philippe. Laboratoire de Zoologie C.P. 160, Université Libre de Bruxelles, av. F.D. Roosevelt 50, B1050 Brussels, Belgium: 1,12,13.

Dufresne-Dube, Louise. Université du Quebec a Rimouski, Département d'Oceanographie, Rimouski, Quebec, Canada: 3,15.

Durham, J. Wyatt. Dept. Paleontology, Univ. of California, Berkeley, CA 94720, USA: 3,9,10,15,16,17,20.

Ellers, Olaf. Dept. of Zoology, Duke University, Durham, N.C. 27706, USA: 1,3,11,17.

Emlet, Richard B. Dept. of Zoology, Univ. of Washington, Seattle, WA 98195, USA: 1,2,3,4,5,7,9,10,14,16,17,18,19.

Emson, Roland. Zoology Department, Kings College, Strand, London WC2 R2L5, England: 1,2,3,4,5,10,11,12,14,16,17,18.

Endeiman, Leonid G. Paleontological Institute, Academy of Sciences of the USSR, Profsojusnaja ul. 113, 117868 GSP-7 Moscow v-321, USSR: 3,9,10,15,17,21.

Engle, John M. Catalina Marine Science Center, P.O. Box 398, Avalon, CA 90704, USA: 1,2,3,4,10,11,15.

Engstrom, Norman A. College of Liberal Arts and Sciences, Northern Illinois University, DeKalb, Illinois 60115, USA: 1,3,4,10,11.

Escoubet, P. Fondation Oceanographique Ricard, Ile des Embiez Le Brusc, 83140 Six Fours Les Plages, France: 1,3,4,10,11,14.

Fankboner, Peter V. Department of Biological Sciences, Simon Fraser University, Burnaby, B.C. V5A 1S6, Canada: 4,10,11,12,13,14,15,16,17.

Fenaux, Lucienne. Station Zoologique (CEROV) BP 28, 06230 Villefranche sur Mer, France: 2,3,10,18,19.

Féral, Jean-Pierre. Laboratoire de Biologie des Invertébrés Marins et Malacologie, M.N.H.N., 55 rue de Buffon, 75005 Paris, France: 4,12,15,17.

Ferrand, Jean-Guy. Lab. Biologie Cellulaire et Animale, UER Sciences, Université d'Orléans, F 45046 Orléans Cedex, France: 1,2,3,12,14,16,17,18.

Fishelson, Lev. Dept. of Zoology, Tel-Aviv University, Tel-Aviv, Israel: 3,5,10,11.

Fleeger, John. Dept. Zoology and Physiology, Louisiana State Univ., Baton Rouge, LA 70810, USA: 2,10.

Foell, Eric J. Deepsea Ventures Inc., P.O. Box 486, Gloucester Point, VA 23062, USA: 1,2,3,4,5,10,15.

Franz, David R. Biology Dept., Brooklyn College, CUNY, Brooklyn, N.Y. 11210, USA: 1,10,12,18.

Franzén-Bengtson, Christina. Paleontologiska institutionen, Box 558, S-751 22 Uppsala, Sweden: 5,9,10.

Fujita, Toshihiko. University of Tokyo, Ocean Research Institute, Minamidai 1-15-1, Nakano, Tokyo, 164, Japan: 1,10,11,15.

Gale, Andrew Scott. Dept. of Geology, Univ. of Liverpool, P.O. Box 147, Liverpool L69 3BX, England: 1,3,5,9,10,15,17.

Gebruk, Andrew V. Moscow State University, Faculty of Biology, Department of Invertebrate Zoology, Moscow B - 234 GSP 119899, USSR: 4,9,10,11,12,13,14,15,16,17,20.

Ghiold, Joe. Dept of Geology, Louisiana State University, Baton Rouge, LA 70803, USA: 3,9,10,11,17.

Ghyoot, Marianne. Université Libre de Bruxelle, Laboratoire de Zoologie C.P. 160, 50 av. F.D. Roosevelt, 1050 Bruxelles, Belgium: 3,11,17.

Giudice, Giovanni. Dipartimento di Biologia Cellulare, E Dello Sviluppo via Archirafi 22, 90123 Palermo, Italy: 3,13,14.

Giuseffi, David Frank. 6728 N. Ross Avenue, Oklahoma City, Oklahoma 73116, USA: 1,5,6,7,9,10,11,15.

Gluchowski, Edward. Silesian University, Department of Earth Sciences, Lab. of Paleontology & Stratigraphy, ul.Mielczarskiego 60,41-200 Sosnowiec, Poland: 5,9.

Graham, John. 3 Maude Street, Oamaru, New Zealand: 1,2,3,4,5,9,10.

Green, Jeffrey J. 44 1/2 NW 8th Street, Oklahoma City, OK 73102, USA: 1,2,5,6,7,8,9,10,15,17.

Guille, Alain. Laboratoire de Biologie des Invertébrés Marins et Malacologie, 55 rue de Buffon, 75005 Paris, France: 2,10,15,21.

Guillou, Monique. Laboratoire d'Océanographie Biologique, Université de Bretagne Occidentale, 6 Avenue Le Gorgeu, 29.283 Brest Cedex, France: 1,10.

Gutt, Julian. Institut fur Polarökologie der Universität Kiel, Olshausenstraße 40-60, D-2300 Kiel 1, Federal Republic of Germany: 4,10,12,17,21.

Haedrich, Richard L. Newfoundland Inst. for Cold Ocean Sci., Memorial University, St. John's, Newfoundland A1B 3X7, Canada: 1,2,3,4,5,10,21.

Hansen, Bent. Zoological Museum, Universitetsparken 15, DK-2100 Copenhagen O, Denmark: 4,10,15.

Harris, Larry G. Zoology Department, University of New Hampshire, Durham, New Hampshire 03824, USA: 1,3,10,11.

Harrold, Christopher. Center for Marine Studies, University of California, Santa Cruz, CA 95064, USA: 1,3,10.

Hawkins, Christopher M. Invertebrates and Marine Plants Div., Fisheries Research Branch (DFO), P.O. Box 550, Halifax, Nova Scotia B3J 2S7, Canada: 1,3,5,10,11,12,13.

Hendler, Gordon. Smithsonian Institution, Smithsonian Oceanographic Sorting Center, Washington, D.C. 20560, USA: 1,2,3,4,5,10,11,12,14,15,16,17,18.

Herring, P.J. Institute of Oceanographic Sciences, Brook Road, Wormley, Surrey GU8 5UB, England: 1,2,4,5.

Herrlinger, Timothy J. University of Southern California, Kelp Invertebrate Project, 531 Encinitas Blvd., Suite 113, Encinitas, CA 92024, USA: 1,2,3,4,10,11,15.

Hess, Hans. I Gerstenacker 8, 4102 Binningen, Switzerland: 1,2,3,5,9.

Hetzel, Howard R. Dept. of Biology, Illinois State University, Normal, IL 61761, USA: 4,10,11.

Hill, Robert B. Dept. of Zoology, University of Rhode Island, Kingston, RI 02881, USA: 4,12,17 .

Himmelman, John H. Département de biologie, Université Laval, Québec G1K 7P4, Canada: 1,2,3,4,10,11,12.

Hoggins, Diane. 49 View Street, Sandy Bay, Tasmania 7005, Australia: 1,10,11,12,14.

Hopkins, Thomas S. Dauphin Island Sea Lab., Box 369-370, Dauphin Island, AL 36528, USA: 1,2,10,11,12,13,15.

Horowitz, Alan Stanley. Department of Geology, Indiana University, 1005 East 10th Street, Bloomington, Indiana 47405, USA: 5,6,9,10,15,17.

Hotchkiss, Frederick H.C. Sherry Road, RD 3 Box 77, Harvard, Mass. 01451, USA: 1,2,3,9,15,21.

Hulbert, Alan W. NMFS/NOAA, Woods Hole, Massachusetts 02543, USA: 1,2,3,10,11.

Imaoka, Tohru. Seto Marine Biological Laboratory, Shirahama-cho, Wakayama-ken, 649-22, Japan: 4,15.

Irimura, Seiichi. Totsuka Senior High School, 2-27-1 Gumisawa, Totsuka-ku, Yokohama, Japan: 2,10,11,15,16.

James, D.B. Research Centre of CMFRI, 29 Commander-in-Chief Road, Madras 600105, India: 1,2,3,4,5,10,11,15.

Jangoux, Michel. Laboratoire de Zoologie, Université Libre de Bruxelles, Avenue F.D. Roosevelt 50, 1050 Bruxelles, Belgium: 1,2,3,4,5,11,14,15,16,17.

Jeal, Frank. Zoology Department, Trinity College, Dublin 2, Ireland: 4,5,10,11,16,17.

Jensen, Margit. Zoological Museum, Universitetsparken 15, DK-2100 Copenhagen Ø, Denmark: 3,9,10,11,12,13,14,15,16,17,20.

Jordan, A.J. Morrow Engineering Ltd., 1405 Bewicke Avenue, North Vancouver, B.C. V7M 3C7, Canada: 1,3,4,10,11.

Jost, Peter. Zoologisches Museum Universität Zürich, Winterthurerstrasse 190, 8057 Zürich , Switzerland: 1,10,11.

Kasyanov, Vladimir L. Institute of Marine Biology, Vladivostok 690022, USSR: 1,3,4,10,14,18.

Katsura, Shigeru. Dept. of Oral Anatomy, School of Dentistry, Tokushima University, Tokushima, Japan: 3,12,13,14,17.

Kawamura, Kazuhiro. Hokkaido Central Fisheries, Experimental Station, Yoichi, Hokkaido, 046, Japan: 3,10,14.

Keller, Brian D. West Quoddy Marine Research Station, P.O. Box 9, Lubel, Me 04652, USA: 3,10,17.

Kelley, L. Scott. 11005 Alhambra, Austin, Texas 78759, USA: 2,5,6,9,10,15,16,17.

Kelly, Stuart M. Department of Geological Sciences, Wright State University, Dayton, Ohio 45435, USA: 5,9,10,11,12,14,17.

Kier, Porter. U.S. National Museum of Natural History, Smithsonian Institution, Washington D.C. 20560, USA: 3,9,10,11,15,17,20.

Kobayashi, N. Biological Laboratory, Doshisha University, Kamikyo-ku, Kyoto 602, Japan: 3,14.

Kojima, Manabu K. Department of Biology, Faculty of Science, Toyama University, 3190 Gofuku, Toyama-shi/ken 930, Japan: 3,14.

Kolata, Dennis R. Illinois State Geological Survey, Natural Resources Building, 615 East Peabody , Champaign, IL 61820, USA: 5,8,9,15,17.

Komatsu, Mieko. Toyama University, Faculty of Science, Department of Biology, Toyama 930, Japan: 1,2,14,17.

Krishnan, Mary Bai. Marine Biological Station, Zoological Survey of India, 12, Leithcastle street, Madras 28, India: .

Kyte, Michael A. Ardea Enterprises, P.O. Box 2602, Lynnwood, WA 98036, USA: 1,2,10,11,15.

LaBarbara, Michael. Department of Anatomy, The University of Chicago, 1025 East 57th Street, Chicago, Illinois 60637, USA: 2,5,10,17.

Lambert, Anne. Laboratoire de biologie marine, Université Libre de Bruxelles, 50 av. FD Roosevelt, B-1050 Bruxelles, Belgium: 1,11,17.

Lambert, Philip. Aquatic Zoology Division, B.C. Provincial Museum, 675 Belleville Street, Victoria, British Columbia V8V 1X4, Canada: 4,10,15,16.

Lane, Gary. Geology Department, Indiana University, Bloomington, IN 47405, USA: 5,9.

Larrain, A. Departmento Zoologia, Univ. de Concepcion, Apd. 10-Concepcion, Casilla 2407, Chile: 1,3,4,9,10,14,15,17.

Lawrence, J.M. University of South Florida, Department of Biology, 4202 Fowler Avenue, Tampa, Florida 33620, USA: 1,3,4,10,11,12,13,17,18.

Lee, Hsueh-tze. Smithsonian Marine Station, Route 1 Box 194C, Fort Pierce, FL 33450, USA: 1,2,3,4,5,10,11,14,17.

Leeling-Werder, Beatrix. Zoologisches Institut und Museum, Martin-Luther-King Platz 3, 2000 Hamburg 13, Federal Republic of Germany: 1,9,10,15,21.

LeGall, Pierre. Laboratoire Maritime, rue Charcot, 14530 Luc sur Mer , France: 3,10,11,18.

Leonard, Alex B. Zoology Department, Trinity College, Dublin 2, Ireland: 5,10,11,13,16,19.

Lessios, Haris. Smithsonian Tropical Research Institute, APO, Miami, Florida 34002, USA: 1,3,10,15.

Lewis, David N. Palaeontology Department, British Museum(Natural History), Cromwell Road, Lonsdon SW7 5BD, England: 1,2,3,5,6,7,8,9,10,11, 14,15,16,17.

Liao, Yulin. Institute of Oceanology, Academia Sinica, 7 Nan-hai Road, Qingdao, People's Republic of China: 1,2,3,4,5,15.

Liddell, W.David. Department of Geology (07), Utah State University, Logan, UT 84322, USA: 5,10.

López-Ibor, Alicia. Catedra of Invertebrados, Facultad de Cienuias, Universidad Complutense, Madrid, Spain: 1,2,3,4,5,10,15.

Lubchenco, Jane. Department of Biology, Oregon State University, Corvallis, OR 97331, USA: 1,3,10.

Lucas, John S. Zoology Department, James Cook University, Townsville, Q 4811, Australia: 1,10,12,14.

Macurda, Jr., Bradford. 10260 Westheimer, Suite 110, Houston, Texas 77042, USA: 2,5,6,9.

Maczyńska, Stefania. Museum of the Earth, Polish Academy of Sciences, Al. Na Skarpie 20/26, 00-488 Warsaw, Poland: 3,9,15.

Mahfouz, Fathey Elsayed Soliman. Amakusa Mar. Biol. Lab., Kyushu Univ. Fac. Sci., Tomioka, Reihoku-cho, Amakusa, Kumamoto-Ken 863-25, Japan: 1,2,3,4,10,14,18.

Maluf, Linda Yvonne. Department Ecology & Evolutionary Biol., University of Arizona, Tucson, Arizona 85721, USA: 1,2,3,4,5,10,15.

Manchenko, Gennady P. Institute of Marine Biology, Vladivostok 690022, USSR: 1,3,15.

Märkel, Konrad. Lehrstuhl f.Spezielle Zoologie, Ruhr-Universität, Postfach 102148, D-4630 Bochum 1, Federal Republic of Germany: 2,3,16,17.

Marques, Vasco Manuel Alves Monteiro. Departmento de Zoologia and Antropologia, Faculdade de Ciencias de Lisboa, Rua da Ecola Politecnica - 1200, Lisboa, Portugal: 2,3,10,15.

Martin, R. Erik. Applied Biology, Inc., P.O. Box 974, Jensen Beach, FL 33457, USA: 1,2,3,4,10,15,18.

Martin, R.B. CSIRO Marine Laboratories, GPO Box 1538, Hobart, Tasmania 7001, Australia: 1,10.

Massin, Claude. Institut Royal des Sciences Naturelles de Belgigne, 29 rue Vautier, 1040 Bruxelles, Belgium: 4,10,15.

Maturo, Jr., Frank. Zoology Department, University of Florida, Gainesville, FL 32611, USA: 1,2,3,4,10,11,15.

McEuen, F. Scott. Dept. of Zoology, Univ. of Alberta, Edmonton, Alberta T6G 2E9, Canada: 4,10,11,12,13,14.

McIntosh, George C. Rochester Museum and Science Center, 657 East Ave., Rochester, New York 14603, USA: 5,9,15,17.

McKemie, Charles E. Wilson and Stonaker Oil and Gas, 5956 Sherry Lane, Suite 910, Dallas, Texas 75225, USA: 5,6,9,10,15.

McKenzie, J. Douglas. Department of Zoology, Queen's University, Belfast, Northern Ireland: 3,10,11,15,16,17.

McNamara, Kenneth J. Western Australian Museum, Francis Street, Perth, 6000, Western Australia: 3,9,10,11,14,15,17,20.

Meijer, Laurent. Station Biologique, 29211 Roscoff, France: 1,3,13,14,15.

Mein, Birgit. „Zoologisches Institut und Zoologishches, Museum der Universität Hamburg, Martin-Luther-King Platz 3, 2000 Hamburg 13, Federal Republic of Germany: 1,15.

Messing, Charles G. Undergraduate Marine Science Program, University of Miami, SA182, Coral Gables, FL 33124, USA: 5,10,15,17,21.

Meyer, Christian Andreas. Geological Institute, Baltzerstr: 1, CH - 3012 Bern, Switzerland: 1,2,3,4,5,9,10,11,15,17.

Miller, John E. Harbor Branch Foundation, Inc., RR #1, Box 196, Fort Pierce, FL 33450, USA: 1,2,3,4,5,11,14,15.

Mironov, Alexander. P.P. Shirshov Institute of Oceanology, Academy of Sciences, USSR, Krasikova, 23, 117218 Moscow, USSR: 3,15,21.

Mladenov, Philip V. Biology Department , Mount Allison University, Jacksonville, N.B. E0A 3C0, Canada: 1,2,4,5,10,14,17,18.

Mooi, Rich. Dept. of Zoology, Univ. of Toronto, Toronto, Ont. M5S 1A1, Canada: 3,11,15,17.

Morrill, John B. Division of Natural Sciences, New College - Univ. of South Florida, Sarasota, Florida 33580, USA: 1,3,4,14.

Motokawa, Tatsuo. Department of Biology, University of the Ryukyus, Nakagusuku, Okinawa, Japan: 1,2,3,4,12,17.

Mukai, Hiroshi. Ocean Research Institute, University of Tokyo, Minamidai 1-15-1, Nakano, Tokyo, 164, Japan: 1,3,4,10,11.

Munar Bernat, Jaime. Department Geologia, Fac. Chencies, Univ. Palma de Mallorca, Carrtra Valldemossa, KM 7'5, 07071 Palma de Mallorca, Baleares, Spain: 3,9,10,15.

Muscat, Ann M. Catalina Marine Science Center, P.O. Box 398, Avalon, CA 90704, USA: 2,10,11,12,15.

Nagaoki, Satoko. Department of Biology, Keio University, 4-1-1 Hiyoshi, Kohoku-ku, Yokohama 223, Japan: 3,13,14,15.

Nateewathana, Anuwat. Phuket Marine Biological Center, P.O. Box 60 Phuket 83000, Phuket, Thailand: 4,10,15.

Nedelec, Henri. Laboratoire d'Ecologie du benthos et de Biologie végétale marine, Faculté des Sciences Luminy, 13288 Marseille Cedex, France: 3,10.

Nestler, Helmut. Sektion Geologische Wissenschaftern der, Ernst-Moritz-Arndt-Univer. Greifswald, Friedrich-Ludwig-Jahn Str. 17 a, DDR-2200 Greifswald, German Democratic Republic: 3,9,10.

Nichols, David. Dept. of Biological Sciences, University of Exeter, Prince of Wales Road, Exeter EX4 4PS, England: 1,2,3,4,5,10,12,14,16,17,18.

Niesen, Thomas M. Department of Biological Sciences, San Francisco State University, San Francisco, CA 94132, USA: 1,3,10,18.

Nojima, Satoshi. Tomioka, Reihoku-cho, Amakusa, Kumamoto-ken 863-25, Japan: 1,3,10,11.

O'Brien, Francis X. Dept. of Biology, Southeastern Mass. University, N. Darthmouth, MA 02747, USA: 1,10,15.

Oguro, Chitaru. Faculty of Science, Department of Biology, Toyama University, Toyama 930, Japan: 1,2,4,14,15,17.

Okada, Minoru. Science Educa. Inst. of Osaka Prefecture, Karita 4-chome, Sumiyoshi-ku, Osaka 558, Japan: 3,14,17.

Oudejans, Rob C.H.M. Laboratory of Chemical Animal Physiology, State University of Utrecht, 8 Padualaan, 3508 TB Utrecht, The Netherlands: 1,12,13,16,17.

Pabian, Roger K. Conservation and Survey Division, IANR, University of Nebraska, Lincoln, NE 68588-0517, USA: 2,3,5,9,10,15.

Pagett, Richard. Wimpol, Hargreaves Road, Groundwell Industrial Estate, Swindon, England: 2,10,11,12.

Paine, Robert T. Department of Zoology, University of Washington, Seattle, WA 98195, USA: 1,3,10.

Parsley, Ronald L. Dept. of Biology, Tulane University, New Orleans, LA 70118, USA: 8,9,10,17.

Paul, C.R.C. Dept. of Geology, Liverpool University, Liverpool L69 3BX, England: 5,6,9,17,20.

Pawson, David L. Room W323, National Museum of Natural History, Smithsonian Institution, Washington D.C. 20560, USA: 3,4,10,15,21.

Penchaszadeh, Pablo. INTECMAR, Univ. Simon Bolivar, Apartado 80659, Caracas, Venezuela: 1,3,4,10,18.

Perez-Ruzafa, Angel. DTO Ecologia Facultad de Biologia, Universidad de Murcia, Spain: 4,10,11,12,14,15,16,17.

Perry, George. Dept. Pathology, Case Western Reserve Univ., Cleveland, Ohio 44106, USA: 1,3,13,14.

Petr, Václav. Faculty of Natural Sciences, Charles University, CS-128 43 Praha 2, Albertov 6, Czechoslovakia: 1,2,5,9,10,15,17.

Phelan, Thomas F. 122 Winnebago, Walla Walla, WA 99362, USA: 3,9,11,15,17,20.

Philip, G.M. Department of Geology and Geophysics, University of Sydney, Sydney NSW, Australia: 3,9.

Philippe, Michel. Musée Guimet d'Histoire naturelle, 28, boulevard des Belges, 69006 Lyon, France: 3,9.

Poddubiuk, Robert. Department of Geology, Bedford College, Inner Circle, Regent's Park, London NW1 4NS, England: 3,9,10,11,15,16,17.

Prestedge, Geoffrey. 16, Geeves Crescent, Midway Point 7171, Tasmania, Australia: 1.11,12,14,16.

Profant, Robert J. Biological Sciences Dept., Santa Barbara City College, 721 Cliff Drive, Santa Barbara, CA 93109, USA: 3,10,15.

Prokop, Rudolf Jan. Department of Palaeontology, National Museum, Vítězného února 74, 115 79 Praha 1, Czechoslovakia: 1,2,5,9,10,15,17.

Regis, Marie-berthe. CERAM-Laboratory de Biologie Marine, Faculté des Sciences et Techniques, rue Henri Poincoiré 13397, Marseille, Cedex 13, France: 3,10,11,17.

Regnéll, Gerhard. Geologiska Institutionen, Sölvegatan 13, S-223 62 Lund, Sweden: 2,3,5,7,8,9.

Roberts, Dai. Zoology Department, Queen's University, Belfast BT1 1NN, N. Ireland: 4,10,17.

Roman, Jean. Institut de Paléontologie, Muséum national d'Histoire naturelle, 8 rue de Buffon, 75005 Paris, France: 3,9.

Rose, Edward P.F. Dept. of Geology, Bedford College(Univ. of London), Regent's Park, London NW1 4MS, England: 3,9,10,20.

Rowe, Francis W.E. Australian Museum, 6-8 College Street, Sydney, New South Wales 2000, Australia: 1,2,3,4,5,15,21.

Rozhnov, Sergei. Paleontological Instit. Academy of Sci., of the USSR, Profsojusnaya, 113, 117868, Moscow, USSR: .

Rumrill, Steven S. Dept. of Zoology, Univ. of Alberta, Edmonton, Alberta T6G 2E9, Canada: 1,2,3,10,14,18.

Saft, Mallory S. Dept. of Biol. Chemistry and Structure, University of Health Sciences, 3333 Green Bay Road, W. Chicago, IL 60064, USA: 1,3,13,14.

Sato, Hidemi. Sugashima Marine Biological Laboratory, Nagoya University, Sugashima-cho, Toba-shi, Mie-Ken 517, Japan: 1,2,3,4,12,13,14,17.

Schatt, Philippe. Laboratoire de Biologie des Invertébrés Marins et de Malacologie, 55 rue Buffon, 75005 Paris, France: 1,2,3,4,5,12,14.

Scheltema, Rudolf S. Woods Hole Oceanographic Institution, Woods Hole, Mass. 02543, USA: 19.

Schinner, Gottfried. Institute for Zoology (Marine Biology), University of Vienna, Althanstrasse 14, A-1090 Vienna, Austria: 3,10,11,17.

Schuetz, Allen. Johns Hopkins School of Hygiene, 615 N. Wore Street, Baltimore, MD 21205, USA: 1,12,14.

Serafy, D. Keith. Department of Biology, Southampton College, Southampton, NY 11968, USA: 2,3,10,15.

Sevastopulo, G.D. Geology Department, Trinity College, Dublin 2, Ireland: 5,6,9,10,15,17.

Shepherd, S.A. Dept. Fisheries, Box 1625 G.P.O., Adelaide 5000, South Australia: 3,10,11.

Shick, Malcolm. Dept. of Zoology, University of Maine, Orono, ME 04469, USA: 1,3,4,10,12,14.

Shirley, Thomas C. School of Fisheries, University of Alaska, 11120 Glacier Hwy., Juneau, AK 99801, USA: 1,2,3,10,12,15.

Sibuet, Myriam. IFREMER, Ceutre de Brest, BP 337, 29273 Brest, France: 1,4,10,15.

Sides, Elizabeth M. 45 Hainault Road, Foxrock, Dublin 18, Ireland: 2,3,10,11,17.

Silver, Robert B. Dept. of Biol. Chem. and Structure, University of Health Sciences, 3333 Green Bay Road, North Chicago, IL 60064, USA: 1,3,12,13,14,16.

Simms, Michael J. Dept. of Geological Sciences, University of Birmingham, P.O. Box 363, Birmingham B15 2TT, England: 3,5,9,15.

Simpson, Rodney D. Department of Zoology, University of New England, Armidale, NSW 2351, Australia: 1,4,10,14.

Singletary, Robert L. Depart. of Biology, University of Bridgeport, Bridgeport, CT 06601, USA: 2,3,10,12,15.

Sloan, Norman A. Dept. of Fisheries and Oceans, Pacific Biological Station, Nanimo, B.C. V9R 5K6, Canada: 1,2,3,4,5,10,11,12,15,16,17

Smirnov, Alexey Vladimirovich. Zoological Institute Academy of Sicences, , Universitetskaya nab., I, Leningrad, I00034, USSR: 1,2,3,4,5,9,15,16,21.

Smirnov, Igor Sergeevich. Zoological Institute Academy of Sciences, Leningrad, 199034, USSR: 2,10,15,21.

Smith, Andrew. Department of Palaeontology, British Museum (Natural History), Cromwell Road, London SW7 5BD, England: 9,15,17,20.

Smith, Frank F. Dept. of Zoology, University of New Hampshire, Durham, NH 03824, USA: 1,2,12,13,14.

Solovjev, Andrey N. Chief of the Enchinoderm Division, Paleonto Instit of the Acad of Sci/USSR, Profsoyusnaya str., 113, 117868 GSP-7, Moscow v-331, USSR: 3,9,10,15,17.

South, G. Robin. Biology Annexe, Memorial Univ. Newfoundland, St. John's, NFLD A1C 5S7, Canada: 3,10.

Spiel, Janis A. Department of Invertebrate Zoology, Royal Ontario Museum, 100 Queen's Park, Toronto, Ont. M5S 2C6, Canada: 1,5,10,15,16.

Stancyk, Steve. Belle W. Baruch Instit. for Marine Biol., and Coastal Research, Univ. of South Carolina, Columbia, SC 29208, USA: 2,10,11,12,14,16,17.

Stickle, Jr., William B. Zoology and Physiology Department, Louisiana State University, Baton Rouge, LA 70803, USA: 1,2,3,4,5,10,11,12,13,14,17.

Stokes, Robert B. School of Geological Sciences, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames, Surrey KT1 2EE, England: 3,9,15,21.

Stopulo, G.D. Seva. Geology Department, Trinity College, Dublin, Dublin, Ireland: 5,6,9,10,15,17.

Strathmann, Richard. Friday Harbor Labs, Friday Harbor, WA 98250, USA: 17,18,19 .

Szymanska, Wanda. Zaktad Paleobiologii Pan, Al.Zwirki i Wigury 93, 02-089 Warszawa, Poland: 3,9,20.

Tablade, Alejandre. Musee Arg. de Ciencias Naturales, Av. Angel Gallardo 470, 1405 Buenos Aires, Argentina: 1,10,11,15,16.

Takahashi, Keiichi. Zoological Institute, Faculty of Science, University of Tokyo, Hongo, Tokyo 113, Japan: 3,12,17.

Taki, Jyo. Hokkaido Wakkanai Fisheries Exp. Stat., Horai, Wakkanai, Hokkaido 097, Japan: 10,12,13.

Tegner, Mia. Scripps Institution of Oceanography, A-001, LaJolla, CA 92093, USA: 1,3,10,11,12,18.

Telford, Malcolm. Department of Zoology, University of Toronto, Ontario M5S 1A1, Canada: 3,10,11,15,16,17.

Tertschnig, Wolfram. Univ. of Vienna, Abt. Meeresbiologie, Althanstr. 14, 1090 Vienna, Austria: 3,10,11,12.

Thandar, Ahmed S. Department of Zoology, University of Durban-Westville, P/Bag X54001, Durban 4000, Republic of South Africa: 2,3,10,11,15,16,17.

Thierry, Jaques. Institut des Sciences de la Terre, Universite de Dijon, 6 13rd Gabriel, 21100 Dijon, France: 3,9,10,15,17.

Thomassin, Bernard. Centre d' Océanographie de Mareille, Station Marine d'Endoume, Rue de la Batterie de Lions, 13007 Marseille, France: 1,3,10,11,17.

Thompson, Geoffrey B. State Pollution Control Commission, 157 Liverpool Street, Sydney 2000, NSW, Australia: 1,3,10,11.

Tommasi, Luiz Roberto. Instituto Oceanográfico da USP, Cidade Universitária - Butantã, Cx. Postal 9075, Sao Paulo, SP 05508, Brasil: 1,2,34,5,10,15.

Tortonese, Enrico. Istituto Zooprofilattico, Lungo Bisagno Dalmazia L5A, 16141 Genova, Italy: 1,15,21.

Turner, Richard L. Department of Biological Sciences, Florida Institute of Technology, Melbourne, FL 33620, USA: 1,2,4,10,11,12,13,14,15,16,17.

Twersky, Laura H. Dept. of Biology, Wagner College, 631 Howard Avenue, Staten Island, NY 10301, USA: 1,4,14,16,17.

Tyler, Paul. Dept. of Oceanography, University College of Swansea, Swansea SA2 8PP, England: 1,2,3,4,10,12,14,18.

Ubaghs, George J. Ch. Université de Liège, Laboratoire de Paléontologie, Place du Vingiaoût 7, B-4000 Liège, Belgium: 5,6,7,8,9.

Vadas, Robert L. Dept. of Botany and Plant Pathology, University of Maine, Orono, ME 04469, USA: 1,3,10,11.

Vadon, Catherine. Museum National d'Histoire Naturelle, Laboratoire de Biologie des Invertébrés Marins, 55, Rue de Buffon, 75005 Paris, France: 2,12,15,21.

Valentinčič, Tine. Institute of Biology, Aškerčeva 12, 61000 Ljubljana, Yugoslavia: 1,2,3,10,11,12,13.

Valentine, John. University of Alabama, Dauphin Island Sea Lab, Box 369-370, Dauphin Is. AL 36528, USA: 1,2,3,4,10,11,15.

Velarde, Ronald G. Point Loma Wastewater Laboratory, 4077 North Harbor Drive, San Diego, CA 92101, USA: 1,2,3,4,10,11,15.

Verlaque, Marc. Laboratoire d'Ecologie du benthos et de Biologie végétale marine , Faculté des Sciences de Luminy, 13288 Marseille Cedex, France: 3,10.

Voogt, Peter A. Lab. Chemical Animal Physiology, State University of Utrecht, 8 Padualaan, Utrecht, The Netherlands: 1,12,13,14,17.

Voss, Joachim. Institute for Polar Ecology, University of Kiel, Olshausenstr. 40-60, D-2300 Kiel, Federal Republic of Germany: 1,10,12,14,15,16,17.

Waters, Johnny A. Dept. of Geology, West Georgia College, Carrollton, GA 30118, USA: 5,6,9,15,16,21.

Watts, Stephen A. Department of Biology, University of South Florida, Tampa, FL 33620, USA: 1,12,13.

Webb, Christine. Oceanography Department, University College, Swansea SA2 8PP, United Kingdom: 1,2,3,10,17.

Weber, W. Zoologisches Institut der Universität, Weyertal 119, 5 Köln 41, Federal Republic of Germany: 3,12,17.

Webster, G.D. Department of Geology, Washington State University, Pullman, Washington 99164-2812, USA: 5,9,15.

White, Mark. Zoology Department, University College, Galway, Ireland: 3,10,17.

Wilkie, I.C. Dept. of Biological Sciences, Glasgow College of Technology, Cowcaddens Road, Glasgow G4 0BA, Scotland: 2,11,12,15,16,17.

Witman, Jon D. Zoology Department, University of New Hampshire, Durham, NH 03824, USA: 2,3,9,10.

Yamaguchi, Masashi. Department of Marine Sciences, University of the Ryukyus, Senbaru, Nishihara, Okinawa 903-01, Japan: 1,2,3,4,5,10,11,14,17,21.

Yanagisawa, Tomio. Tokyo Metropolitan Univ., Dept. of Biology, Fukazarra 2-1-1, Setagayaka, Tokyo, Japan: 1,2,3,4,5,13,14,15.

Young, Craig M. Department of Biological Science, Florida State University, Tallahassee, FL 32306, USA: 3,4,10,14,19.

Yourassowsky, Catherine. Université Libre de Bruxelles, Laboratoire de biologie marine CP 160, 50 av. F. Roosevelt, 1050 Bruxelles, Belgium: 1,12,14,16,17.

Zimmer, Francis Scott. 11804 White Way, Austin, TX 78753, USA: 3,5,6,9,15,17.

DEATHS

Martinsson, Prof.Anders Department of Palaeobiology, University of Uppsala, Sweden. 16 July 1983.

Lönning-Vader, Sunniva. Professor of Aquatic Biology, University of Tromsö, Norway. 11 July 1985. Prof. Lönning died of leukemia. Her early work on fertilization and early development, and the influence of various "alient substances" on these processes, used echinoid eggs. During recent years, Prof. Lönning was increasingly interested in The comparative biology of Strongylocentrotus species. Her husband, W. Vader, will finish the manuscripts of these works. Available reprints of Prof. Lönning's work may be obtained through him.

---

1 ASTEROIDS

Aldrich, Andrade, Arnaud, Arteche Irueta, Aziz, Barker, Basch, Beijnink, Belyaev, Birkeland, Birtles, Black, Blake, Booth, Jr., Branstrator, Breton, Broertjes, Burke, Bussarawich, Caine, Cameron, Cameron, Campbell, Campbell, Cannon, Carson, Caso, Chaet, Chen, Cherbonnier, Chiu, Clark, Cuenca, Davis, De Moura-Britto, De Vos, Dearborn, DeCelis, Diehl, Dobson, Downey, Dravage, Dubois, Ellers, Emlet, Emson, Engle, Engstrom, Escoubet, Ferrand, Foell, Franz, Fujita, Gale, Giuseffi, Graham, Green, Guillou, Haedrich, Harris, Harrold, Hawkins, Hendler, Herring, Herrlinger, Hess, Himmelman, Hoggins, Hopkins, Hotchkiss, Hulbert, James, Jangoux, Jordan, Jost, Kasyanov, Komatsu, Kyte, Lambert, Larrain, Lawrence, Lee, Leeling-Werder, Lessios, Lewis, Liao, López-Ibor, Lubchenco, Lucas, Mahfouz, Maluf, Manchenko, Martin, Martin, Maturo, Jr., Meijer, Mein, Meyer, Miller, Mladenov, Morrill, Motokawa, Mukai, Nichols, Niesen, Nojima, O'Brien, Oguro, Oudejans, Paine, Penchaszadeh, Perry, Petr, Prestedge, Prokop, Rowe, Rumrill, Saft, Sato, Schatt, Schuetz, Shick, Shirley, Sibuet, Silver, Simpson, Sloan, Smirnov, Smith, Spiel, Stickle, Jr., Tablade, Tablade, Tegner, Thomassin, Thompson, Tommasi, Tortonese, Turner, Twersky, Tyler, Vadas, Valentinčić, Valentine, Velarde, Voogt, Voss, Watts, Webb, Yamaguchi, Yanagisawa, Yourassowsky

2 OPHIUROIDS

Albuquerque, Andrade, Arnaud, Arteche Irueta, Aziz, Barker, Basch, Beijnink, Birkeland, Birtles, Booth, Jr., Bray, Breton, Broom, Buckland-Nicks, Burke, Bussarawich, Byrne, Cameron, Campbell, Caso, Chen, Cherbonnier, Concepcion, Costelloe, De Moura-Britto, De Vos, Dearborn, DeCelis, Diehl, Dobson, Dravage, Emlet, Emson, Engle, Fenaux, Ferrand, Fleeger, Foell, Graham, Green, Guille, Haedrich, Hendler, Herring, Herrlinger, Hess, Himmelman, Hopkins, Hotchkiss, Hulbert, Irimura, James, Jangoux, Kelley, Komatsu, Kyte, LaBarbara, Lee, Lewis, Liao, López-Ibor, Macurda, Jr., Mahfouz, Maluf, Manchenko, Markel, Marques, Martin, Maturo, Jr., Meyer, Miller, Mladenov, Motokawa, Muscat, Nichols, Oguro, Pabian, Pagett, Petr, Prokop, Regnell, Rowe, Rumrill, Sato, Schatt, Serafy, Shirley, Sides, Singletary, Sloan, Smirnov, Smirnov, Smith, Stancyk, Stickle, Jr., Thandar, Tommasi, Turner, Tyler, Vadon, Valentincic, Valentine, Velarde, Webb, Wilkie, Witman, Yamaguchi, Yanagisawa

3 ECHINOIDS

Alvarez, Alvarez, Andrade, Arnaud, Arteche Irueta, Aziz, Barker, Basch, Beijnink, Berger, Birkeland, Birtles, Black, Booth, Jr., Boudouresque, Burke, Bussarawich, Caldwell, Cameron, Campbell, Campbell, Cannon, Carpenter, Caso, Chen, Cherbonnier, Chiu, Concepcion, Constable, Couilard, Cuenca, Dafni, David, De Greef, De Ridder, De Vos, DeCelis, Demarge, Diehl, Dix, Dravage, Dube, Dufresne-Dube, Durham, Ellers, Emlet, Emson, Endelman, Engle, Engstrom, Escoubet, Fenaux, Ferrand, Fishelson, Foell, Gale, Ghiold, Ghyoot, Giudice, Graham, Haedrich, Harris, Harrold, Hawkins, Hendler, Herrlinger, Hess, Himmelman, Hotchkiss, Hulbert, James, Jangoux, Jensen, Jordan, Kasyanov, Katsura, Kawamura, Keller, Kier, Kobayashi, Kojima, Larrain, Lawrence, Lee, LeGall, Lessios, Lewis, Liao, López-Ibor, Lubchenco, Maczyńska, Mahfouz, Maluf, Manchenko, Märkel, Marques, Martin, Maturo, Jr., McKenzie, McNamara, Meijer, Meyer, Miller, Mironov, Mooi, Morrill, Motokawa, Mukai, Munar Bernat, Nagaoki, Nedelec,

3(cont)
Nestler, Nichols, Niesen, Nojima, Okada, Pabian, Paine, Parsley, Pawson, Penchaszadeh, Perry, Phelan, Philip, Philippe, Poddubiuk, Profant, Regis, Regnéll, Roman, Rose, Rowe, Rumrill, Saft, Sato, Schatt, Scheltema, Schinner, Serafy, Shepherd, Shick, Shirley, Sides 3, Silver, Simms, Singletary, Sloan, Smirnov, Solovjev, South, Stickle, Jr., Stokes, Szymanska, Takahashi, Tegner, Telford, Tertschnig, Thandar, Thierry, Thomassin, Thompson, Tommasi, Tyler, Vadas, Valentincic, Valentine, Velarde, Verlaque, Voogt, Webb, Weber, White, Witman, Yamaguchi, Yanagisawa, Young, Zimmer,

4 HOLOTHUROIDS
Aldrich, Alvarez, Arnaud, Arteche Irueta, Aziz, Barker, Beijnink, Belyaev, Bergen, Birkeland, Birtles, Booth, Jr., Burke, Bussarawich, Byrne, Cameron, Cameron, Campbell, Cannon, Carson, Caso, Chen, Cherbonnier, Conand, Concepcion, Cuenca, Cutress, De Vos, Derstler, Diehl, Dobson, Emlet, Emson, Engle, Engstrom, Escoubet, Fankboner, Féral, Foell, Gebruk, Graham, Gutt, Haedrich, Hansen, Hendler, Herring, Herrlinger, Hetzel, Hill, Himmelman, Imaoka, James, Jangoux, Jeal, Jordan, Kasyanov, Katsura, Lambert, Larrain, Lawrence, Lee, Liao , López-Ibor, Mahfouz, Maluf, Martin, Massin, Maturo, Jr., McEuen, Meyer, Miller, Mladenov, Morrill, Motokawa, Mukai, Nateewathana, Nichols, Oguro, Pawson, Penchaszadeh, Perez-Ruzafa, Roberts, Rowe, Sato, Schatt, Simpson, Sloan, Smirnov, Stickle, Jr., Turner, Twersky, Tyler, Valentine, Velarde, Yamaguchi, Yanagisawa, Young

5 CRINOIDS
Arendt, Arteche Irueta, Ausich, Aziz, Barker, Beijnink, Birkeland, Birtles, Breton, Broadhead, Brower, Burke, Bussarawich, Byrne, Campbell, Chen, Cherbonnier, Clark, Costelloe, De Vos, Dearborn, Dobson, Donovan, Emlet, Emson, Fishelson, Foell, Franzen-Bengtson, Gale, Giuseffi, Gluchowski, Graham, Green, Haedrich, Hawkins, Hendler, Herring, Hess, Horowitz, James, Jangoux, Jeal, Kelley, Kelly, Kolata, LaBarbara, Lane, Lee, Leonard, Lewis, Liao, Liddell, López-Ibor, Macurda, Jr., Maluf, McIntosh, McKemie, Messing, Meyer, Miller, Mladenov, Nichols, Pabian, Paul, Petr, Prokop, Regnéll, Rowe, Schatt, Sevastopulo, Simms, Smirnov, Spiel, Stickle, Jr., Stopulo, Tommasi, Ubaghs, Waters, Webster, Yamaguchi, Yanagisawa, Zimmer

6 BLASTOIDS
Arendt, Donovan, Giuseffi, Green, Horowitz, Kelley, Lewis, Macurda, Jr., McKemie, Paul, Sevastopulo, Stopulo, Ubaghs, Waters, Zimmer

7 EDRIOASTEROIDS
Arendt, Caster, Derstler, Dravage, Emlet, Giuseffi, Green, Lewis, Regnell, Ubaghs

8 STYLOPHORANS
Arendt, Caster, Chauvel, Derstler, Donovan, Dravage, Green, Kolata, Lewis, Parsley, Regnéll, Ubaghs

9 PALEONTOLOGY

Ausich, Blake, Branstrator, Breton, Broadhead, Brower, Carpenter, Caster, Chauvel, Dafni, David, Demarge, Derstler, Donovan, Dravage, Durham, Emlet, Endeiman, Franzen-Bengtson, Gale, Gebruk, Ghiold, Giuseffi, Gluchowski, Graham, Green, Hess, Horowitz, Hotchkiss, Jensen, Kelley, Kelly, Kier, Kolata, Lane, Larrain, Leeling-Werder, Lewis, Macurda, Jr., Maczynska, McIntosh, McKemie, McNamara, Meyer, Munar Bernat, Nestler, Pabian, Parsley, Paul, Petr, Phelan, Philip, Philippe, Poddubiuk, Prokop, Regnéll, Roman, Rose, Sevastopulo, Simms, Smirnov, Smith, Solovjev, Stokes Stopulo, Szymanska, Thierry, Ubaghs, Waters, Webster, Witman, Zimmer

10 ECOLOGY

Alvarez, Alvarez, Andrade, Arnaud, Ausich, Aziz, Barker, Basch, Belyaev, Bergen, Berger, Birkeland, Birtles, Black, Blake, Booth, Jr., Boudouresque, Branstrator, Broom, Brunel, Bussarawich, Byrne, Caldwell, Cameron, Cameron, Campbell, Campbell, Carpenter, Carson, Caso, Chen, Cherbonnier, Chiu, Conand, Concepcion, Constable, Costelloe, Couilard, Cuenca, Cutress, Dafni, David, De Moura-Britto, De Ridder, Dearborn, DeCelis, Demarge, Diehl, Dix, Dobson, Donovan, Dravage, Durham, Emlet, Emson, Endeiman, Engle, Engstrom, Escoubet, Fankboner, Fenaux, Fishelson, Fleeger, Foell, Franz, Franzen-Bengtson, Fujita, Gale, Gebruk, Ghiold, Giuseffi, Graham, Green, Guille, Guillou, Gutt, Haedrich, Hansen, Harris, Harrold, Hawkins, Hendler, Herrlinger, Hetzel, Himmelman, Hoggins, Hopkins, Horowitz, Hulbert, Irimura, James, Jeal, Jensen, Jordan, Jost, Kasyanov, Kawamura, Keller, Kelley, Kelly, Kier, Kyte, LaBarbara, Lambert, Larrain, Lawrence, Lee, Leeling-Werder, LeGall, Leonard, Lessios, Lewis, Liddell, López-Ibor, Lubchenco, Lucas, Mahfouz, Maluf, Marques, Martin, Martin, Massin, Maturo, Jr., McEuen, McKemie, McKenzie, McNamara, Messing, Meyer, Mladenov, Mukai, Munar Bernat, Muscat, Nateewathana, Nedelec, Nestler, Nichols, Niesen, Nojima, O'Brien, Pabian, Pagett, Paine, Parsley, Pawson, Penchaszadeh, Perez-Ruzafa, Petr, Poddubiuk, Profant, Prokop, Regis, Roberts, Rose, Rumrill, Schinner, Serafy, Sevastopulo, Shepherd, Shick, Shirley, Sibuet, Sides, Simpson, Singletary, Sloan, Smirnov, Solovjev, South, Spiel, Stancyk, Stickle, Jr., Stopulo, Tablade, Tablade, Taki, Tegner, Telford, Tertschnig, Thandar, Thierry, Thomassin, Thompson, Tommasi, Turner, Tyler, Vadas, Valentincic, Valentine, Velarde, Verlaque, Voss, Webb, White, Witman, Yamaguchi, Young

11 BEHAVIOR

Arnaud, Barker, Basch, Beijnink, Birkeland, Birtles, Blake, Boudouresque, Bray, Broom, Byrne, Campbell, Campbell, Carpenter, Caso, Chen, Chiu, Constable, Cuenca, Dafni, De Moura-Britto, De Ridder, Dearborn, Donovan, Ellers, Emson, Engle, Engstrom, Escoubet, Fankboner, Fishelson, Fujita, Gebruk, Ghiold, Ghyoot, Giuseffi, Harris, Hawkins, Hendler, Herrlinger, Hetzel, Himmelman, Hoggins, Hopkins, Hulbert, Irimura, James, Jangoux, Jeal, Jensen, Jordan, Jost, Kelly, Kier, Kyte, Lambert, Lawrence, Lee, LeGall, Leonard, Lewis, Maturo, Jr., McEuen, McKenzie, McNamara, Meyer, Miller, Mooi, Mukai, Muscat, Nojima, Pagett, Perez-Ruzafa, Phelan, Poddubiuk, Prestedge, Regis, Schinner, Shepherd, Sides, Sloan, Stancyk, Stickle, Jr., Tablade, Tablade, Tegner, Telford, Tertschnig, Thandar,

11(cont)
Thomassin, Thompson, Turner, Vadas, Valentincic, Valentine, Velarde, Wilkie, Yamaguchi

12 PHYSIOLGOY

Alvarez, Barker, Beijnink, Berger, Broertjes, Broom, Burke, Byrne, Caine, Caldwell, Campbell, Campbell, Carpenter, Caso, Chaet, Chen, Chiu, Conand, Dafni, De Ridder, Diehl, Dobson, Dubois, Emson, Fankboner, Feral, Ferrand, Franz, Gebruk, Gutt, Hawkins, Hendler, Hill, Himmelman, Hoggins, Hopkins, Jensen, Katsura, Kelly, Lawrence, Lucas, McEuen, Motokawa, Muscat, Nichols, Oudejans, Pagett, Perez-Ruzafa, Prestedge, Sato, Schatt, Schuetz, Shick, Shirley, Silver, Singletary, Sloan, Smith, Stancyk, Stickle, Jr., Takahashi, Taki, Tegner, Tertschnig, Turner, Tyler, Vadon, Valentinčič, Voogt, Voss, Watts, Weber, Wilkie, Yourassowsky

13 BIOCHEMISTRY

Barker, Beijnink, Broertjes, Burke, Caine, Diehl, Dobson, Dubois, Fankboner, Gebruk, Giudice, Hawkins, Hopkins, Jensen, Katsura, Lawrence, Leonard, McEuen, Meijer, Nagaoki, Oudejans, Perry, Saft, Sato, Silver, Smith, Stickle, Jr., Taki, Turner, Valentinčič, Voogt, Watts, Yanagisawa

14 EMBRYOLOGY, DEVELOPMENTAL BIOLOGY

Andrade, Barker, Buckland-Nicks, Burke, Caine, Caldwell, Cameron, Cameron, Carpenter, Carson, Costelloe, Couilard, Cutress, Davis, De Greef, De Moura-Britto, De Vos, Emlet, Emson, Escoubet, Fankboner, Ferrand, Gebruk, Giudice, Hendler, Hoggins, Jangoux, Jensen, Kasyanov, Katsura, Kawamura, Kelly, Kobayashi, Kojima, Komatsu, Larrain, Lee, Lewis, Lucas, Mahfouz, McEuen, McNamara, Meijer, Miller, Mladenov, Morrill, Nagaoki, Nichols, Oguro, Okada, Perez-Ruzafa, Perry, Prestedge, Rumrill, Saft, Sato, Schatt, Schuetz, Shick, Silver, Simpson, Smith, Stancyk, Stickle, Jr., Turner, Twersky, Tyler, Voogt, Voss, Yamaguchi, Yanagisawa, Young, Yourassowsky

15 SYSTEMATICS

Albuquerque, Arendt, Arteche Irueta, Ausich, Aziz, Barker, Basch, Belyaev, Bergen, Berger, Birtles, Blake, Booth, Jr., Branstrator, Brower, Bussarawich, Cameron, Campbell, Carpenter, Caso, Caster, Chen, Cherbonnier, Clark, Concepcion, Costelloe, Cuenca, De Moura-Britto, Dearborn, Demarge, Derstler, Downey, Dravage, Dube, Dufresne-Dube, Durham, Endeiman, Engle, Fankboner, Feral, Foell, Fujita, Gale, Gebruk, Giuseffi, Green, Guille, Hansen, Hendler, Herrlinger, Hopkins, Horowitz, Hotchkiss, Imaoka, Irimura, James, Jangoux, Jensen, Kelley, Kier, Kolata, Kyte, Lambert, Larrain, Leeling-Werder, Lessios, Lewis, Liao, López-Ibor, Maczyńska, Maluf, Manchenko, Marques, Martin, Massin, Maturo, Jr., McIntosh, McKemie, McKenzie, McNamara, Meijer, Mein, Messing, Meyer, Miller, Mironov, Mooi, Munar Bernat, Muscat, Nagaoki, Nateewathana, O'Brien, Oguro, Pabian, Pawson, Perez-Ruzafa, Petr, Phelan, Poddubiuk, Profant, Prokop, Rowe, Rumrill, Serafy, Sevastopulo, Shirley, Sibuet, Simms, Singletary, Sloan, Smirnov, Smirnov, Smith, Solovjev, Spiel, Stokes, Stopulo, Tablade, Tablade, Telford, Thandar, Thierry, Tommasi,

15(cont)
Tortonese, Turner, Vadon, Valentine, Velarde, Voss, Waters, Webster, Wilkie, Yanagisawa, Zimmer

16 ANATOMY
Aldrich, Arendt, Barker, Beijnink, Blake, Byrne, Caine, Campbell, Caso, Costelloe, Cuenca, De Ridder, De Vos, Durham, Emlet, Emson, Fankboner, Ferrand, Gebruk, Hendler, Irimura, Jangoux, Jeal, Jensen, Kelley, Lambert, Leonard, Lewis, Markel, McKenzie, Nichols, Oudejans, Perez-Ruzafa, Poddubiuk, Prestedge, Silver, Sloan, Smirnov, Spiel, Stancyk, Tablade, Tablade, Telford, Thandar, Turner, Twersky, Voss, Waters, Wilkie, Yourassowsky

17 FUNCTIONAL MORPHOLOGY
Aldrich, Arendt, Ausich, Barker, Beijnink, Black, Blake, Branstrator, Bray, Broadhead, Broertjes, Brower, Burke, Byrne, Cameron, Cameron, Campbell, Campbell, Carpenter, Caster, Chen, Clark, Costelloe, Cuenca, Dafni, David, De Greef, De Moura-Britto, De Ridder, De Vos, Dearborn, Derstler, Dobson, Donovan, Dravage, Durham, Ellers, Emlet, Emson, Endeiman, Fankboner, Féral, Ferrand, Gale, Gebruk, Ghiold, Ghyoot, Green, Gutt, Hendler, Hill, Horowitz, Jangoux, Jeal, Jensen, Katsura, Keller, Kelley, Kelly, Kier, Kolata, Komatsu, LaBarbara, Lambert, Larrain, Lawrence, Lee, Lewis, Markel, McIntosh, McKenzie, McNamara, Messing, Meyer, Mladenov, Mooi, Motokawa, Nichols, Oguro, Okada, Oudejans, Parsley, Paul, Perez-Ruzafa, Petr, Phelan, Poddubiuk, Prokop, Regis, Roberts, Sato, Schinner, Sevastopulo, Sides, Sloan, Smith, Solovjev, Stancyk, Stickle, Jr., Stopulo, Strathmann, Takahashi, Telford, Thandar, Thierry, Thomassin, Turner, Twersky, Voogt, Voss, Webb, Weber, White, Wilkie, Yamaguchi, Yourassowsky

18 REPRODUCTION
Bray, Buckland-Nicks, Byrne, Carson, Chiu, Davis, Emlet, Emson, Fenaux, Ferrand, Franz, Hendler, Kasyanov, LeGall, Mahfouz, Martin, Mladenov, Nichols, Niesen, Penchaszadeh, Rumrill, Strathmann, Tegner, Tyler

19 LARVAE
Alvarez, Cameron, Emlet, Fenaux, Leonard, Scheltema, Strathmann, Young

20 EVOLUTION
Arendt, Broadhead, Brower, David, Derstler, Durham, Gebruk, Jensen, Kiev, McNamara, Paul, Phelan, Rose, Smith, Szymanska

21 BIOGEOGRAPHY
Andrade, Arteche Irueta, Belyaev, Caso, Clark, David, Endeiman, Guille, Gutt, Haedrich, Hotchkiss, Leeling-Werder, Messing, Mironov, Pawson, Rowe, Smirnov, Smirnov, Stokes, Tortonese, Vadon, Waters, Yamaguchi

ARGENTINA
Tablade

AUSTRALIA
Birtles, Black, Cannon, Constable, Dix, Hoggins, Lucas, Martin, McNamara, Philip, Prestedge, Rowe, Sheperd, Simpson, Thompson

AUSTRIA
Schinner, Tertschnig

BELGIUM
De Greef, De Ridder, De Vos, Dubois, Ghyoot, Jangoux, Lambert, Massin, Ubaghs, Yourassowsky, Voss

BRASIL
Albuquerque, De Moura-Britto, Tommasi

CANADA
Aldrich, Berger, Brunel, Buckland-Nicks, Burke, Caine, Carson, Couilard, Dube, Dufresne-Dube, Fankboner, Haedrich, Hawkins, Himmelman, Jordan, Lambert, McEuen, Mladenov, Mooi, Rumrill, Sloan, South, Spiel Telford

CANARY ISLANDS
Alvarez

CHILE
Andrade, Larrain

CZECHOSLOVAKIA
Petr, Prokop

DENMARK
Hansen, Jensen

FEDERAL REPUBLIC OF GERMANY
Gutt, Leeling-Werder, Märkel, Mein, Webe

FRANCE
Arnaud, Breton, Chauvel, Cherbonnier, Conand, Cuenca, David, Demarge, Escoubet, Fenaux, Féral, Ferrand, Guille, Guillot, LeGall, Meijer, Nedelec, Philippe, Regis, Roman, Schatt, Sibuet, Thierry, Thomassin, Vadon, Verlaque, Boudouresque

GERMAN DEMOCRATIC REPUBLIC
Nestler

GUAM
Birkeland

HONG KONG
Chiu

INDIA
James, Krishnan, McKenzie

IRELAND
Costelloe, Donovan, Jeal, Leonard, Sevastopulo, Sides, Stopulo, White

ISRAEL
Dafni, Fishelson

ITALY
Giudice, Tortonese

JAPAN
Fujita, Imaoka, Irimura, Katsura, Kawamura, Kobayashi, Kojima, Komatsu, Mahfouz, Motokawa, Mukai, Nagaoki, Nojima, Oguro, Okada, Sato, Takahashi, Taki, Yamaguchi, Yanagisawa

MEXICO
Alvarez, Caso

NEW ZEALAND
Barker, Graham

NORTHERN IRELAND
Roberts

PEOPLE'S REPUBLIC OF CHINA
Liao

PHILLIPPINES
DeCelis

POLAND
Gluchowski, Maczyńska, Szymanska

PORTUGAL
Marques

PUERTO RICO
Cameron, Cutress

REPUBLIC OF SOUTH AFRICA
Thandar

SCOTLAND
Wilkie

SPAIN
Arteche Irueta, Concepcion, López-Ibor, Munar Bernat, Perez-Ruzafa

SWEDEN
Franzen-Bengtson, Regnéll

SWITZERLAND
Hess, Jost, Meyer

REPUBLIC OF CHINA
Chen

THAILAND
Bussarawich, Nateewathana

THE NETHERLANDS
Beijnink, Oudejans, Voogt

UNITED KINGDOM
Broom, Campbell, Clark, Emson, Gale, Herring, Hill, Nichols, Pagett, Paul, Poddubiuk, Rose, Simms, Smith, Stokes, Tyler, Webb

USA
Ausich, Basch, Bergen, Blake, Booth, Jr., Branstrator, Bray, Broadhead, Brower, Byrne, Caldwell, Cameron, Campbell, Carpenter, Caster, Chaet, Davis, Dearborn, Derstler, Diehl, Dobson, Downey, Dravage, Durham, Ellers, Emlet, Engle, Engstrom, Fleeger, Foell, Franz, Ghiold, Giuseffi,

USA (cont)

Green, Harris, Harrold, Hendler, Herrlinger, Hetzel, Hopkins, Horowitz, Hotchkiss, Hulbert, Keller, Kelley, Kelly, Kier, Kolata, Kyte, LaBarbara, Lane, Lawrence, Lee, Lessios, Lewis, Liddell, Lubchenco, Macurda, Jr., Maluf, Martin, Maturo, Jr., McIntosh, McKemie, Messing, Miller, Morrill, Muscat, Niesen, O'Brien, Pabian, Paine, Parsley, Pawson, Perry, Phelan, Profant, Saft, Scheltema, Schuetz, Serafy, Shick, Shirley, Silver, Singletary, Smith, Stancyk, Stickle, Jr., Strathmann, Tegner, Turner, Twersky, Vadas, Valentine, Velarde, Waters, Watts, Webster, Witman, Young, Zimmer

USSR

Arendt, Belyaev, Endeiman, Gebruk, Kasyanov, Manchenko, Mironov, Rozhnov, Smirnov, Smirnov, Solovjev

VENEZUELA

Penchaszadeh

YUGOSLAVIA

Valentiñcic

ECHINODERM NEWSLETTER INFORMATION

Return to:
John Lawrence
Dept. of Biology
Univ. of South Florida
Tampa, FLorida 33620

(please print)

Name _____
(last name) (first names)

Professional address _____

_____

_____

Taxonomic group(s) of particular interest (please check)

___ Asteroids
___ Ophiuroids
___ Echinoids
___ Holothuroids
___ Crinoids
___ Blastoids
___ Edrioasteroids
___ Stylophorans
___ other extinct classes (indicate) _____
orders (indicate) _____
families (indicate) _____

Research area(s) of particular interest (please check)

___ paleontology ___ reproduction
___ ecology ___ larvae
___ behavior ___ evolution
___ physiology ___ biogeography
___ biochemistry
___ embryology, developmental biology
___ systematics
___ anatomy
___ functional morphology
___ other (indicate) _____

Other items for newsletter (requests, notices, suggestions, etc.)

_____

_____

_____

_____

_____